

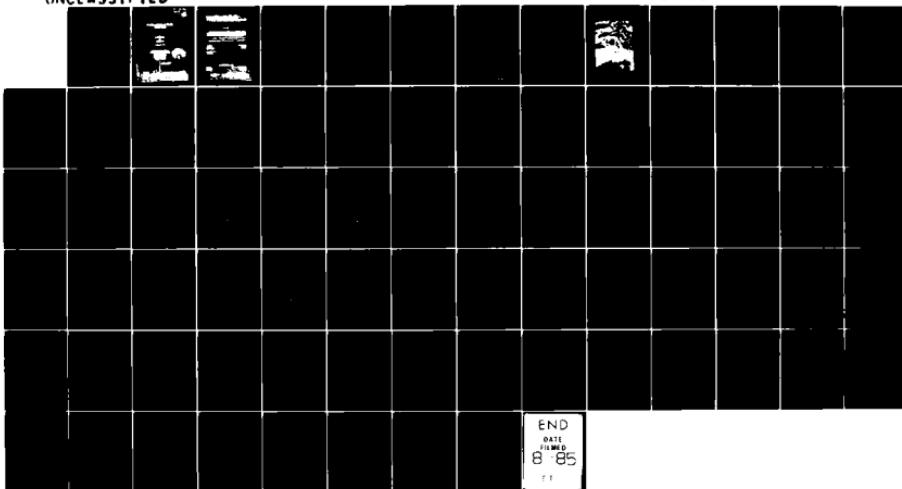
AD-A156 660 SURFACE WINDS AT NWC (NAVAL WEAPONS CENTER): 1964-1982
(U) NAVAL WEAPONS CENTER CHINA LAKE CA
A R KELSO ET AL. FEB 85 NWC-TP-0572 SBI-AD-E900 456

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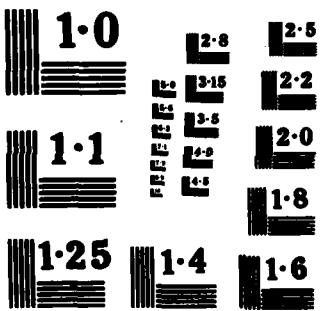
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER TP 6572	2. GOVT ACCESSION NO. AD-A156660	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Surface Winds at NWC: 1964-1982	5. TYPE OF REPORT & PERIOD COVERED Final compilation of surface wind data at NWC for 19 years.	
7. AUTHOR(s) A. Raymond Kelso and Richard W. Evert	6. PERFORMING ORG. REPORT NUMBER	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Weapons Center China Lake, CA 93555-6001	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Weapons Center China Lake, CA 93555-6001	12. REPORT DATE February 1985	
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	13. NUMBER OF PAGES 74	
	15. SECURITY CLASS. (of this report) UNCLASSIFIED	
	16. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution is unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
Weather Surface winds Wind direction Wind speeds	Visibility Test & Evaluation	
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) (U)Surface winds at NWC can affect tests and flight activities. The winds and the dust they can carry affect not only visibility and personnel safety, they also aerodynamically influence missiles and parachutes. (U)Surface winds at NWC tend to be seasonally similar as well as similar in their daily surface pattern. A compendium of seasonal and daily surface wind information is useful to Center personnel in scheduling tests as well as in performing test assessments. (U)The compiled data are presented in tables and wind roses.		

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S/N 0102-LF-014-6601

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INTRODUCTION

The Naval Weapons Center (NWC), China Lake, California, is the principal Navy RDT&E Center for air warfare systems and missile weapon systems, and the national range/facility for parachute test and evaluation.

NWC is geographically well located for its mission because good flying weather and abundant air and ground space are essential for weapon testing and evaluation. Clear skies prevail at NWC throughout most of the year; the climate is semi-arid with precipitation averaging about 3.5 inches a year.

Surface winds affect tests and flight activities at NWC. This report contains surface wind data recorded at the Center over a 19-year period. Because winds blow in a seasonal pattern as well as in a diurnal pattern, the wind data contained in this report will help Center personnel in planning and scheduling tests and will aid in test evaluation.

Surface wind data in this report were recorded at the Instrument Observation Building (IOB) on NWC's China Lake Complex. Attention must be paid, however, to topographic and orographic details at NWC, because winds can be highly variable from place to place. The IOB is located in a position which makes it less subject to high winds, especially northerly winds, than either the the Naval Air Facility or the west side of the valley. On the other hand, westerly winds are more likely to be stronger at IOB than on the west side of the valley. Therefore, test site location should be taken into consideration when surface wind data is used for scheduling and test evaluation.

TOPOGRAPHY OF NWC RANGES

NWC lies on the northwestern edge of the Mojave Desert at latitude 35°N and longitude 117°W, and is 2,215 feet above mean sea level (msl) (see Figure 1). NWC has two major areas: the China Lake Complex and the Mojave B/Randsburg Wash Complex. The NWC headquarters area, the China Lake community, and the city of Ridgecrest are located in the Indian Wells Valley near the southern edge of the China Lake Complex.

The Mojave B/Randsburg Wash Test Range Complex administrative facilities are located in Randsburg Wash, 25 miles southeast of the China Lake community. Winds over this Complex have not been consistently monitored and are not considered in this report.

Mountains surround the China Lake Complex test ranges: the peaks of the Sierra Nevada, a few miles to the west reach 8,000 feet; about 75 miles north, Mt. Whitney, the highest point in the contiguous 48 states, exceeds 14,000 feet. The China Lake Complex is bounded on the north by the Coso Range and on the east by the Argus Range with peaks up to 8,000 feet; and to the south by the El Paso Moutnains which reach heights of 6,000 feet. Further east, the Panamint Mountains rise over 10,000 feet.

EFFECT OF WIND PATTERNS ON FLYING WEATHER

Air routinely flows into the Indian Wells Valley through low mountain passes. Air circulates in from the San Joaquin Valley via Tehachapi Pass and Red Rock Canyon as well as Walker Pass. To the northwest, air from Owens Valley flows through the gap at Little Lake. From the east, air often comes into the Valley through Burro Canyon and, from the southeast, through the gap between the Argus and El Paso Mountains (see Figure 1).

Flying weather is generally good throughout the year except for turbulence caused by gusty surface winds. Flying is affected at all altitudes by the gusty winds and by turbulence produced near, or downwind of mountain slopes. Wave clouds over the Sierra Nevada Mountains occur during strong westerly flows. These flows, called horizontal rotors, eddy thousands of feet in a circular motion. The surrounding mountains, however, have a moderating effect on the jet stream. When a moderate-to-strong northwesterly jet stream lies high above the Center and causes strong winds over the southern Mojave Desert, only a light southwesterly flow occurs over the Center because of the mountains.

Each month averages more than 20 clear days. Ceilings less than 5,000 feet occur only 3 to 6 days a year. Marginal flying conditions exist about 6 days a year, and are caused either by poor visibility from blowing dust and sand, or by lowered ceilings occurring in conjunction with frontal precipitation. For a few summer days, mainly during August, torrential rains, low ceilings, and cumulus activity may accompany southeasterly to southwesterly flows.

SEASONAL WINDS

The strongest winds occur in the late winter and spring as fronts move rapidly through the area. These fronts occasionally cause severe heavy sand and dust storms.

Winters are cool—nighttime temperatures often drop below 32° with daytime temperatures hovering in the 50s for about 70 days. A trace of snow falls at China Lake about once a year, but every 2 or 3 years as many as 4 inches may accumulate. Light surface winds are typical of winter months. Frontal systems with an average wind speed of 30 mph pass quickly through the Center. Occasionally during the winter, westerly winds of 25 to 40 mph blow for 24 hours.

Excellent visibility (50 to 150 miles) generally prevails during the winter. Even though winds over 15 mph frequently pick up loose sand, visibility seldom decreases to less than 10 miles. When strong north winds develop after the passage of fast-moving cold fronts or low pressure troughs, blowing dust or alkali that are carried into the valley can further decrease visibility to 2 to 7 miles. This happens only 2 or 3 days a winter.

Summers at NWC are characteristically hot and dry; visibility is about 60 miles. Daytime temperatures rise to 100°F or higher about 60 days a year and at nighttime drop to between 60° and 70°. Winds are usually calm during morning hours, but as afternoon temperatures rise, southwesterly winds of 10 to 20 mph develop. At times rapid and uneven surface ground heating creates "dust devils," whirlwinds filled with sand, with localized winds up to 35 mph.

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FIGURE 1. Map Showing NWC, the Surrounding Mountains, and the Major Air Flows.

WINDS AND TEST AND EVALUATION

Surface winds are a critical factor affecting tests and flight activities at NWC. Winds, and the dust they can carry, affect not only visibility and personnel safety, but also influence the trajectory of missiles and parachutes, thereby distorting test results. In addition, blowing dust can cause electrical effects that make handling of explosives hazardous.

DATA COLLECTION AND REDUCTION

The surface wind data herein were recorded over a 19-year period from early 1964 through late 1982, and are presented in the form of tables and graphs (wind roses). The data are compiled in 13 sets of five figures each. One figure of each set covers a 24-hour period. Each of the four figures covers four daily 6-hour time segments. The first set is a multi-year compilation of wind directions and speeds; the other 12 sets are compilations for like months.

Surface winds were recorded hourly at the IOB on NWC's China Lake Complex with a Bendix Friez Model 120 wind sensor. Using this data, Charter Data Processing (CDP), on contract to the Environmental Office at NWC, digitized and compiled the surface wind speeds and directions.

Recorded wind information is combined into four daily segments: 0000-0600, 0600-1200, 1200-1800, and 1800-2400. Wind direction is labeled for each of the 16 compass directions, and the corresponding wind speed value is placed into one of the following groups: 1-3, 4-6, 7-9, 10-14, 15-19, 20-24, and above 25 mph.

DATA PRESENTATION

NWC surface-wind data are presented in tables and in wind roses in the Appendix. Both presentations are used because each emphasizes a different aspect of the compiled data.

The tables (see sample below) emphasize wind speed during a certain percentage of the total number of recorded hours. Column 1 identifies the 16 compass directions from which the wind blows. Columns 2 through 8 give the number of hourly recordings of the wind speeds (in mph) blowing from each of the 16 compass directions. Column 9 gives the total number of hourly wind recordings for each compass direction and Column 10 gives the average wind speed for each compass direction. Column 11 gives the percentage of time the wind blew from each direction. Note that the total percentage of time the wind blew from each of the 16 directions does not always total up to 100.0% because of rounding-off. For example, in the period covered in the sample table, the wind blew from the north in 1738 hourly recording periods. These recordings represent 1% of the total number of recordings made, and the wind speed averaged 9 mph when it blew from the north.

Direction	1 1-3	2 4-6	-----	8 10-14	9 15-19	10 20-24	11 25	Tot.	Ave	%
N	793	117		229	338	122	39	1738	9.0	1.0
NNE										
NE										
ENE										

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The wind roses in this publication show the direction of the wind at a given location during a certain time. Radii extending from the center of the circle show the percentage of time the wind blew from a particular direction. For example, a radius extending from the center of the circle to the north indicates that the wind blew from the north; the percentage of time it blew is indicated by the length of that radius. Each wind rose accommodates a maximum radius (center to edge) representing 30 percent. Radii representing less than 3% (considered insignificant in identifying trends) have been excluded. At the end of each radius is a number that indicates the average wind speed for that radius.

WIND DIRECTION

The wind directions used in this document define the direction, relative to true north, from which the wind is blowing. Listed below are the limiting angles for the sixteen compass points used in the tables and wind roses. Wind speeds are stated in miles per hour.

<u>Compass point</u>	<u>Angle, deg</u>	<u>Compass point</u>	<u>Angle, deg</u>
N	349-011	S	169-191
NNE	012-033	SSW	192-213
NE	034-056	SW	214-236
ENE	057-078	WSW	237-258
E	079-101	W	259-281
ESE	102-124	WNW	282-304
SE	125-146	NW	305-326
SSE	147-168	NNW	327-348

Appendix
COMPILED SURFACE WIND DATA

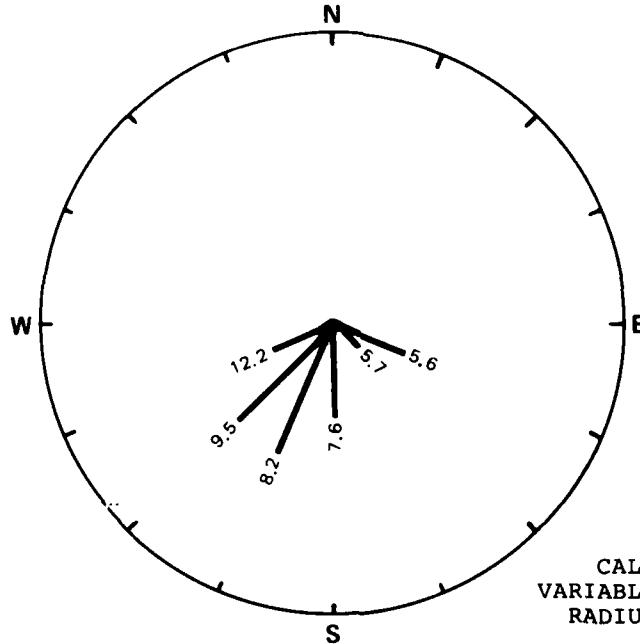
This Appendix contains tables and wind roses showing the compilation of 19 years of surface wind data at NWC. The tables and wind roses are presented as a multi-year compilation of data followed by compilations of data for like-months.

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WEATHER STATION NAME: I.O.B.

MULTIYEAR WIND ROSE
1964-1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH	1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT	Avg	%TOT
N	739	117	154	229	338	122	39	1738	9.0	1.0	
NNE	551	138	150	118	126	30	13	1126	6.8	0.7	
NE	1462	199	181	130	93	36	12	2113	4.5	1.3	
ENE	1199	331	183	100	30	-	-	1843	4.1	1.1	
E	1611	789	349	95	15	-	-	2859	4.2	1.7	
ESE	4275	4468	3523	932	139	14	3	13354	5.6	8.0	
SE	1763	1948	1549	462	70	6	3	5801	5.7	3.5	
SSE	1024	1029	749	164	38	1	5	3010	5.5	1.8	
S	2293	3181	6934	2808	456	29	3	15704	7.6	9.5	
SSW	5002	5532	6070	4145	2538	414	121	23822	8.2	14.4	
SW	5035	3741	4532	4768	3791	955	366	23188	9.5	14.0	
WSW	2766	1072	1153	1603	2609	1319	885	11407	12.2	6.9	
W	749	283	500	742	843	366	270	3753	12.4	2.3	
WNW	1620	337	462	474	418	123	85	3519	7.5	2.1	
NW	1290	292	354	346	260	62	27	2631	6.6	1.6	
NNW	392	181	295	368	307	65	9	1617	9.6	1.0	
VRBL	22633	3086	492	34	2	-	-	26247	2.4	15.8	
CALM	22225	-	-	-	-	-	-	22225	0.0	13.4	
TOT	76629	26724	27630	17518	12073	3542	1841	165957	6.1	100.0	



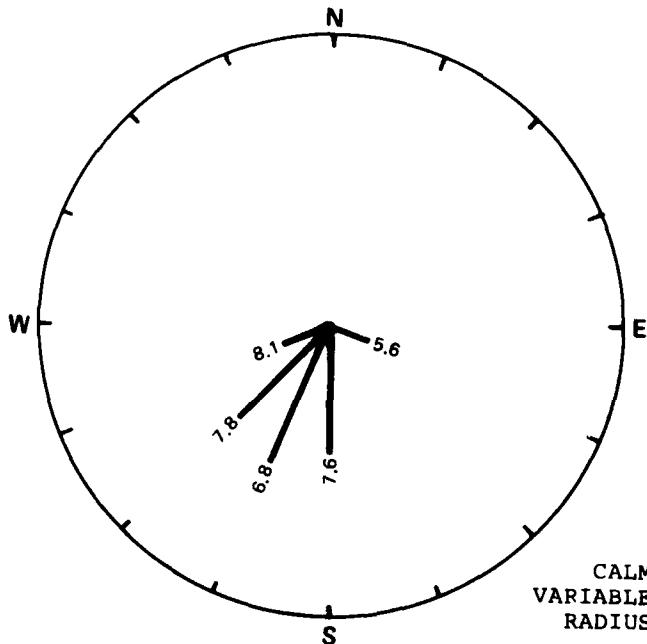
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WEATHER STATION NAME: I.O.B.

MULTIYEAR WIND ROSE
1964-1982

HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	93	30	43	57	36	12	-	271	8.3	0.7
NNE	73	19	31	23	12	1	-	159	6.5	0.4
NE	312	33	25	9	9	5	-	393	3.2	0.9
ENE	158	19	10	4	1	-	-	192	2.8	0.5
E	211	65	18	3	1	-	-	298	3.4	0.7
ESE	614	461	469	132	18	3	-	1697	5.6	4.1
SE	351	240	254	116	17	1	1	980	5.9	2.4
SSE	194	148	121	22	3	-	-	488	5.2	1.2
S	701	1050	2629	897	129	7	1	5414	7.6	13.1
SSW	1646	1948	1730	790	339	44	14	6511	6.8	15.7
SW	1729	1175	1079	1036	589	115	39	5762	7.8	13.9
WSW	950	309	201	243	316	116	55	2190	8.1	5.3
W	214	70	81	97	76	12	15	565	8.3	1.4
WNW	448	71	103	73	37	10	4	746	5.1	1.8
NW	325	69	106	96	63	9	6	674	6.5	1.6
NNW	44	60	86	124	77	16	-	407	10.5	1.0
VRBL	6801	542	57	5	-	-	-	7405	2.1	17.9
CALM	7312	-	-	-	-	-	-	7312	0.0	17.6
TOT	22176	6309	7043	3727	1723	351	135	41464	5.0	100.0



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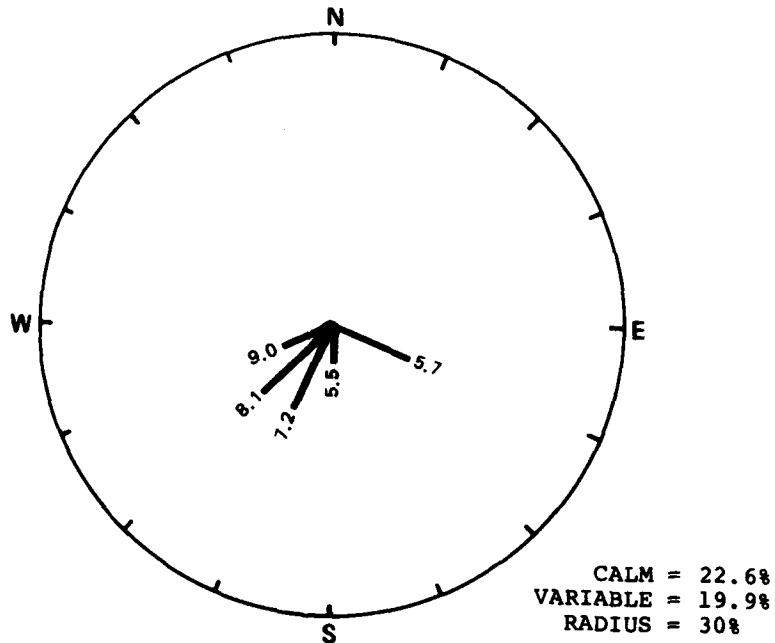
WEATHER STATION NAME: I.O.B.

MULTIYEAR WIND ROSE

1964-1982

HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	401	30	27	54	102	41	16	671	7.3	1.6
NNE	268	34	21	22	23	7	5	380	4.8	0.9
NE	623	41	23	18	15	15	5	740	3.2	1.8
ENE	350	69	20	12	5	-	-	456	3.2	1.1
E	396	222	80	19	3	-	-	720	4.2	1.7
ESE	1084	1198	1126	257	15	-	-	3680	5.7	8.9
SE	440	418	257	46	6	-	-	1167	5.0	2.8
SSE	449	225	80	21	5	-	-	780	4.2	1.9
S	722	444	304	149	51	4	1	1675	5.5	4.0
SSW	1503	879	506	495	439	65	34	3921	7.2	9.4
SW	1690	647	426	478	630	203	61	4135	8.1	10.0
WSW	1130	192	124	155	329	203	145	2278	9.0	5.5
W	390	54	62	75	103	67	45	796	8.9	1.9
WNW	751	80	85	51	48	26	7	1048	4.3	2.5
NW	634	97	96	72	50	13	3	965	4.6	2.3
NNW	176	29	68	71	80	17	1	442	8.3	1.1
VRBL	7714	495	59	5	1	-	-	8274	2.0	19.9
CALM	9380	-	-	-	-	-	-	9380	0.0	22.6
TOT	28101	5154	3364	2000	1905	661	323	41508	4.1	100.0

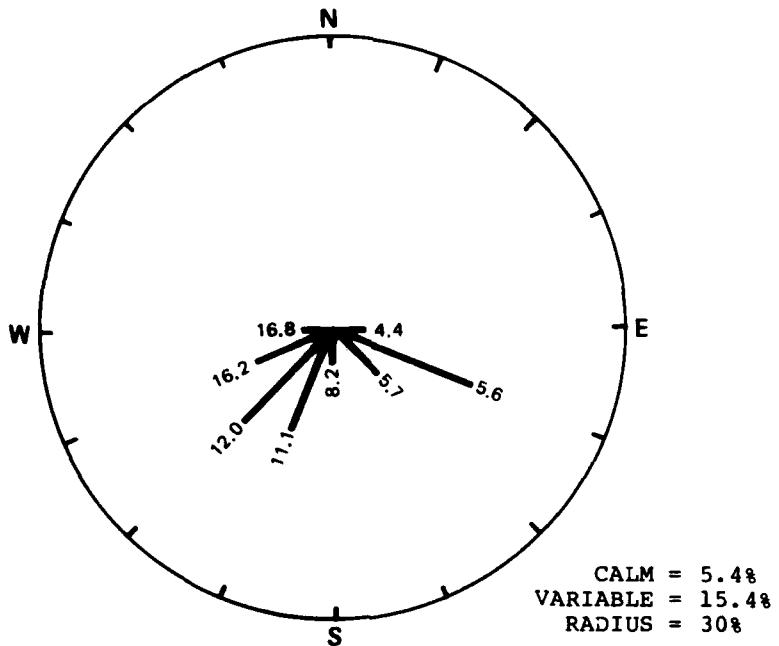


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WEATHER STATION NAME: I.O.B.

MULTIYEAR WIND ROSE
1964-1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25				
N	180	31	42	62	116	56	15	502	10.5	1.2	
NNE	164	52	45	43	70	19	3	396	8.1	1.0	
NE	358	86	79	57	55	14	7	656	6.1	1.6	
ENE	568	203	109	55	23	-	-	958	4.5	2.3	
E	837	427	206	66	10	-	-	1546	4.4	3.7	
ESE	2073	2391	1606	429	80	1	1	6581	5.6	15.9	
SE	709	1028	784	173	16	1	1	2712	5.7	6.5	
SSE	252	501	365	71	13	1	2	1205	6.0	2.9	
S	206	330	598	322	117	8	1	1582	8.2	3.8	
SSW	325	603	1224	1214	1011	204	51	4632	11.1	11.2	
SW	402	668	1236	1337	1282	401	185	5511	12.0	13.3	
WSW	279	278	326	475	1065	645	513	3581	16.2	8.6	
W	69	76	103	199	407	217	185	1256	16.8	3.0	
WNW	218	99	105	138	187	69	70	886	11.7	2.1	
NW	201	72	44	53	60	15	8	453	7.4	1.1	
NNW	132	47	70	49	65	17	4	384	8.6	0.9	
VRBL	4416	1667	314	12	1	-	-	6410	3.2	15.4	
CALM	2251	-	-	-	-	-	-	2251	0.0	5.4	
TOT	13640	8559	7256	4755	4578	1668	1046	41502	8.0	100.0	

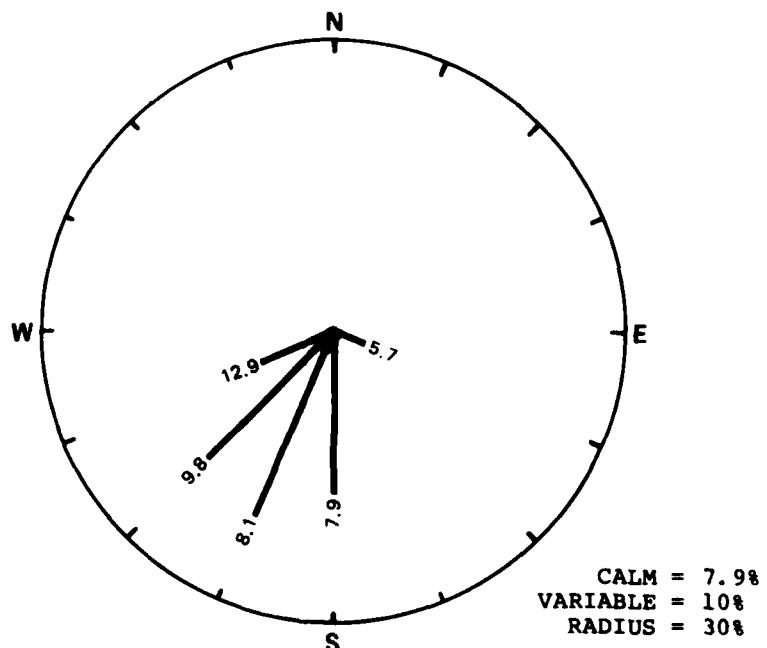


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WEATHER STATION NAME: I.O.B.

MULTIYEAR WIND ROSE
1964-1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25				
N	65	26	42	56	84	13	8	294	11.1	0.7	
NNE	46	33	53	30	21	3	5	191	8.4	0.5	
NE	169	39	54	46	14	2	-	324	5.5	0.8	
ENE	123	40	44	29	1	-	-	237	5.0	0.6	
E	167	75	45	7	1	-	-	295	4.2	0.7	
ESE	504	418	322	114	26	10	2	1396	5.7	3.4	
SE	263	262	254	127	31	4	1	942	6.5	2.3	
SSE	129	155	183	50	17	-	3	537	6.6	1.3	
S	664	1357	3403	1440	159	10	-	7033	7.9	17.0	
SSW	1528	2102	2610	1646	749	101	22	8758	8.1	21.1	
SW	1214	1251	1791	1917	1290	236	81	7780	9.8	18.8	
WSW	407	293	502	730	899	355	172	3358	12.9	8.1	
W	76	83	254	371	257	70	25	1136	12.1	2.7	
WNW	203	87	169	212	146	18	4	839	9.2	2.0	
NW	130	54	108	125	87	25	10	539	9.8	1.3	
NNW	40	45	71	124	85	15	4	384	11.3	0.9	
VRBL	3702	382	62	12	-	-	-	4158	2.3	10.0	
CALM	3282	-	-	-	-	-	-	3282	0.0	7.9	
TOT	12712	6702	9967	7036	3867	862	337	41483	7.6	100.0	

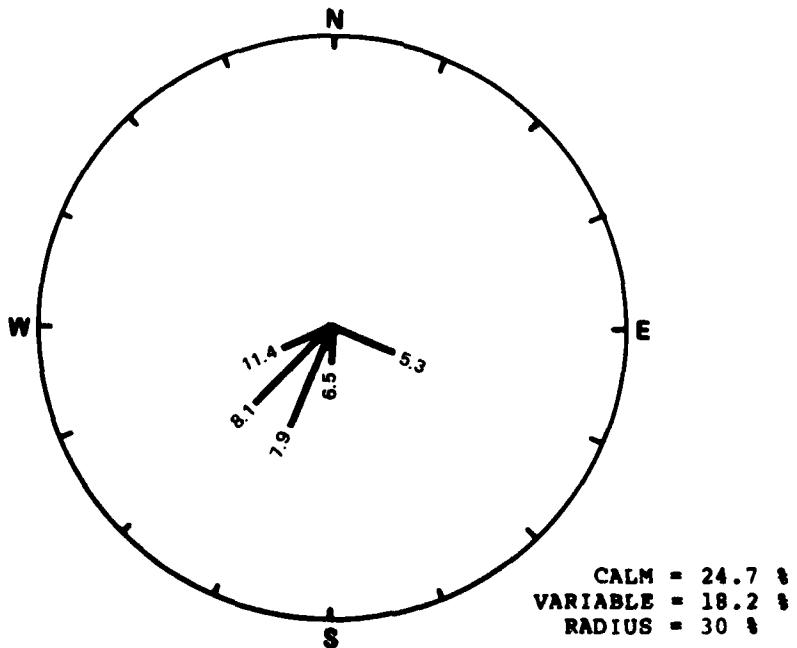


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WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JANUARY - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25				
N	174	13	9	24	23	7	4	254	5.6	1.8	
NNE	135	28	15	22	17	3	1	221	5.3	1.6	
NE	252	24	13	13	10	4	-	316	3.6	2.2	
ENE	190	22	2	4	-	-	-	218	2.7	1.5	
E	262	104	24	6	-	-	-	396	3.6	2.8	
ESE	409	280	235	71	3	-	1	999	5.3	7.1	
SE	140	95	62	19	4	2	-	322	5.2	2.3	
SSE	40	30	27	7	2	-	1	107	5.7	0.8	
S	192	110	114	74	35	2	-	527	6.5	3.7	
SSW	570	368	174	146	208	59	31	1556	7.9	11.0	
SW	604	289	169	177	207	74	35	1555	8.1	11.0	
WSW	264	66	48	97	151	89	66	781	11.4	5.5	
W	68	15	16	18	25	19	24	185	11.3	1.3	
WNW	149	19	26	18	19	10	6	247	6.2	1.7	
NW	143	20	26	27	18	-	-	234	5.1	1.7	
NNW	69	14	29	28	18	-	-	158	6.9	1.1	
VRBL	2426	128	13	3	-	-	-	2570	1.9	18.2	
CALM	3483	-	-	-	-	-	-	3483	0.0	24.7	
TOT	9570	1625	1002	754	740	269	169	14129	4.0	100.0	

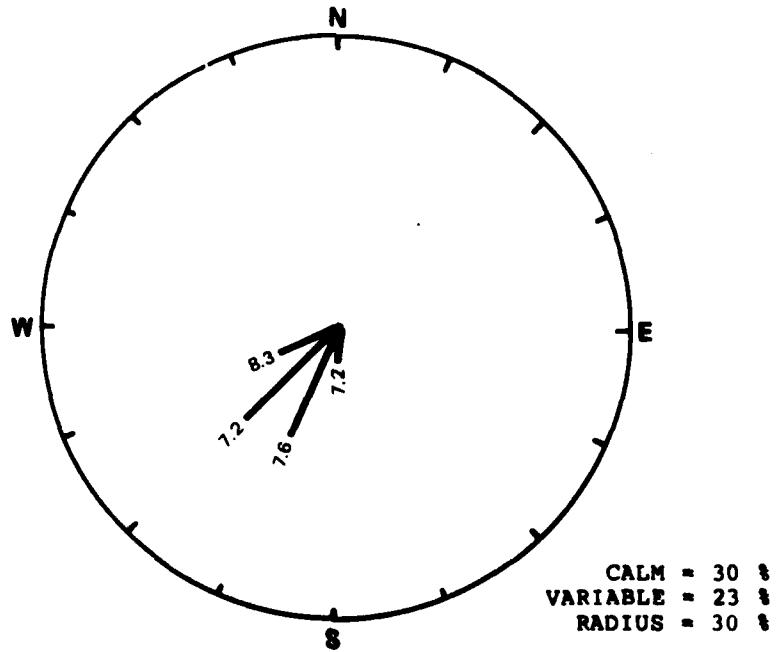


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JANUARY - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	14	2	5	4	3	2	-	30	7.2	0.9
NNE	10	2	2	3	2	-	-	19	6.4	0.5
NE	44	5	3	2	-	-	-	54	2.7	1.5
ENE	17	3	1	-	-	-	-	21	2.5	0.6
E	17	9	1	-	-	-	-	27	3.6	0.8
ESE	19	12	18	6	-	-	-	55	5.7	1.6
SE	13	3	11	5	1	-	-	33	6.5	0.9
SSE	8	5	4	1	-	-	-	18	5.4	0.5
S	42	26	21	15	16	1	-	121	7.2	3.4
SSW	150	114	53	38	43	17	9	424	7.6	12.0
SW	197	99	66	54	51	13	6	486	7.2	13.8
WSW	93	19	17	28	26	9	9	201	8.3	5.7
W	19	1	5	6	3	2	1	37	7.5	1.0
WNW	38	6	4	3	1	-	-	52	3.5	1.5
NW	34	7	9	4	-	-	-	54	3.9	1.5
NNW	5	4	7	8	4	-	-	28	9.2	0.8
VRBL	764	41	4	1	-	-	-	810	1.9	23.0
CALM	1058	-	-	-	-	-	-	1058	0.0	30.0
TOT	2542	358	231	178	150	44	25	3528	3.7	99.8

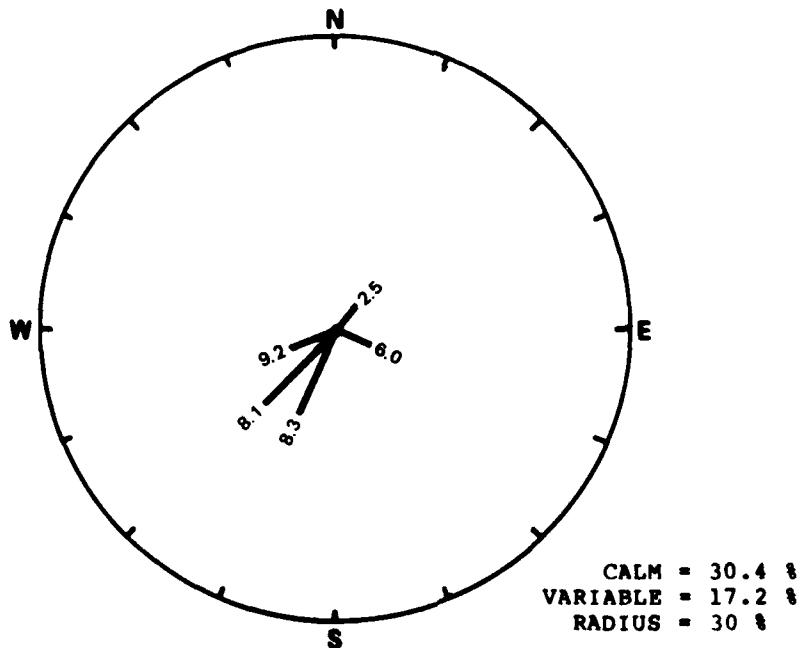


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JANUARY - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	80	2	-	6	3	1	4	96	4.2	2.7
NNE	65	7	3	2	1	-	1	79	3.2	2.2
NE	96	5	-	2	2	-	-	105	2.5	3.0
ENE	29	4	-	-	-	-	-	33	2.1	0.9
E	24	15	2	2	-	-	-	43	3.8	1.2
ESE	43	40	40	18	1	-	-	142	6.0	4.0
SE	16	18	4	6	1	-	-	45	5.6	1.3
SSE	5	8	9	1	2	-	-	25	6.9	0.7
S	42	20	19	8	4	1	-	94	5.7	2.7
SSW	126	77	36	25	50	15	11	340	8.3	9.6
SW	166	60	31	30	59	16	11	373	8.1	10.6
WSW	93	10	7	22	24	17	11	184	9.2	5.2
W	37	6	2	3	10	8	5	71	9.0	2.0
WNW	60	5	3	4	5	3	2	82	5.2	2.3
NW	77	9	6	7	1	-	-	100	3.2	2.8
NNW	25	3	5	2	3	-	-	38	4.6	1.1
VRBL	582	25	2	-	-	-	-	609	1.7	17.2
CALM	1075	-	-	-	-	-	-	1075	0.0	30.4
TOT	2641	314	169	138	166	61	45	3534	3.7	99.9

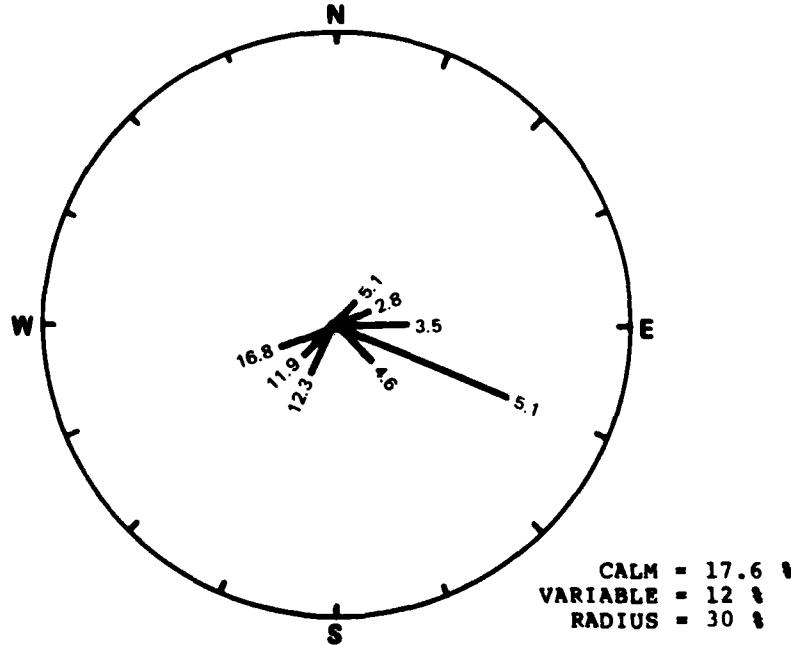


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JANUARY - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	63	5	2	8	10	3	-	91	5.6	2.6
NNE	47	14	5	7	10	2	-	85	6.0	2.4
NE	78	9	4	6	8	4	-	109	5.1	3.1
ENE	123	11	1	3	-	-	-	138	2.8	3.9
E	182	67	17	3	-	-	-	269	3.5	7.6
ESE	303	201	152	39	2	-	1	698	5.1	19.8
SE	92	55	32	5	2	-	-	186	4.6	5.3
SSE	19	13	8	3	-	-	-	43	4.7	1.2
S	21	15	18	19	5	-	-	78	7.5	2.2
SSW	37	24	14	30	67	17	7	196	12.3	5.5
SW	46	15	15	19	44	21	9	169	11.9	4.8
WSW	29	9	9	22	64	45	36	214	16.8	6.1
W	5	5	5	4	10	7	18	54	18.0	1.5
WNW	22	3	7	6	11	7	4	60	10.9	1.7
NW	20	2	3	4	7	-	-	36	6.8	1.0
NNW	36	2	8	7	7	-	-	60	5.9	1.7
VRBL	402	20	3	-	-	-	-	425	1.7	12.0
CALM	622	-	-	-	-	-	-	622	0.0	17.6
TOT	2147	470	303	185	247	106	75	3533	5.4	100.0

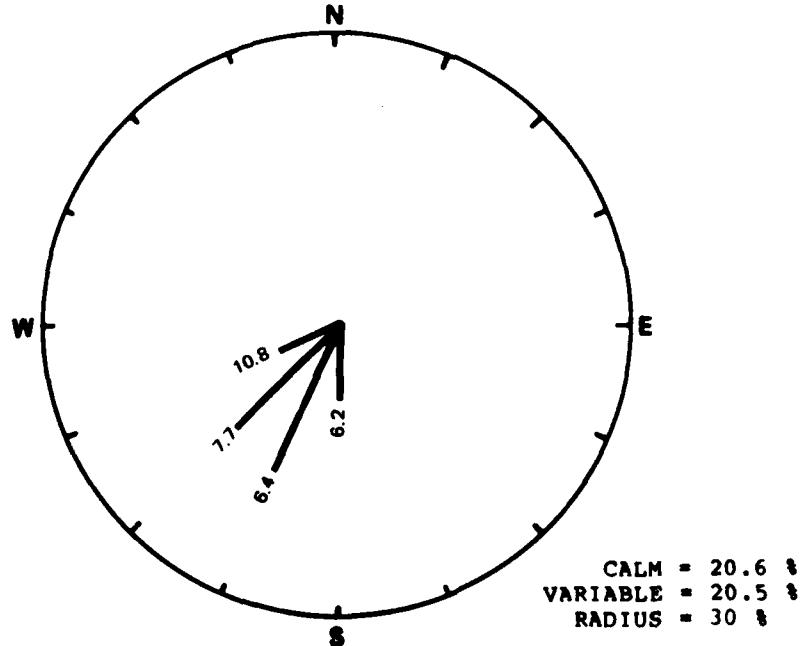


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JANUARY - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	17	4	2	6	7	1	-	37	8.1	1.0
NNE	13	5	5	10	4	1	-	38	8.0	1.1
NE	34	5	6	3	-	-	-	48	3.6	1.4
ENE	21	4	-	1	-	-	-	26	3.0	0.7
E	39	13	4	1	-	-	-	57	3.4	1.6
ESE	44	27	25	8	-	-	-	104	5.2	2.9
SE	19	19	15	3	-	2	-	58	5.9	1.6
SSE	8	4	6	2	-	-	1	21	6.7	0.6
S	87	49	56	32	10	-	-	234	6.2	6.6
SSW	257	153	71	53	48	10	4	596	6.4	16.9
SW	195	115	57	74	53	24	9	527	7.7	14.9
WSW	49	28	15	25	37	18	10	182	10.8	5.1
W	7	3	4	5	2	2	-	23	9.0	0.7
NNW	29	5	12	5	2	-	-	53	5.1	1.5
NW	12	2	8	12	10	-	-	44	9.4	1.2
NNW	3	5	9	11	4	-	-	32	9.4	0.9
VRBL	678	42	4	2	-	-	-	726	2.0	20.5
CALM	728	-	-	-	-	-	-	728	0.0	20.6
TOT	2240	483	299	253	177	58	24	3534	4.5	99.8

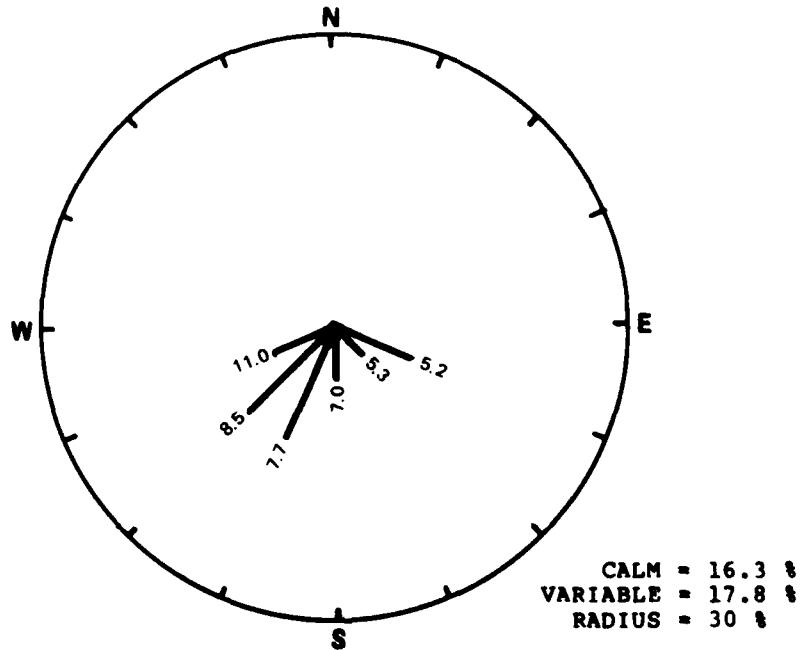


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
FEBRUARY - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	122	14	18	42	45	23	12	276	9.3	2.2
NNE	92	16	19	18	23	9	3	180	7.4	1.4
NE	175	23	19	12	10	-	-	239	3.8	1.9
ENE	116	27	20	18	3	-	-	184	4.4	1.4
E	176	52	19	11	3	-	-	261	4.0	2.0
ESE	419	361	257	55	7	-	-	1099	5.2	8.6
SE	148	141	105	27	3	-	-	424	5.3	3.3
SSE	46	38	31	12	3	-	-	130	5.8	1.0
S	161	150	205	103	29	3	1	652	7.0	5.1
SSW	416	403	310	223	179	28	3	1562	7.7	12.2
SW	519	286	200	242	242	69	20	1578	8.5	12.3
WSW	274	69	64	87	175	86	51	806	11.0	6.3
W	69	14	22	32	59	40	42	278	14.0	2.2
WNW	163	29	19	30	23	10	6	280	6.2	2.2
NW	162	32	35	28	35	3	1	296	5.8	2.3
NNW	45	29	41	43	33	4	1	196	9.1	1.5
VRBL	2097	159	23	2	-	-	-	2281	2.1	17.8
CALM	2094	-	-	-	-	-	-	2094	0.0	16.3
TOT	7294	1843	1407	985	872	275	140	12816	6.0	100.0

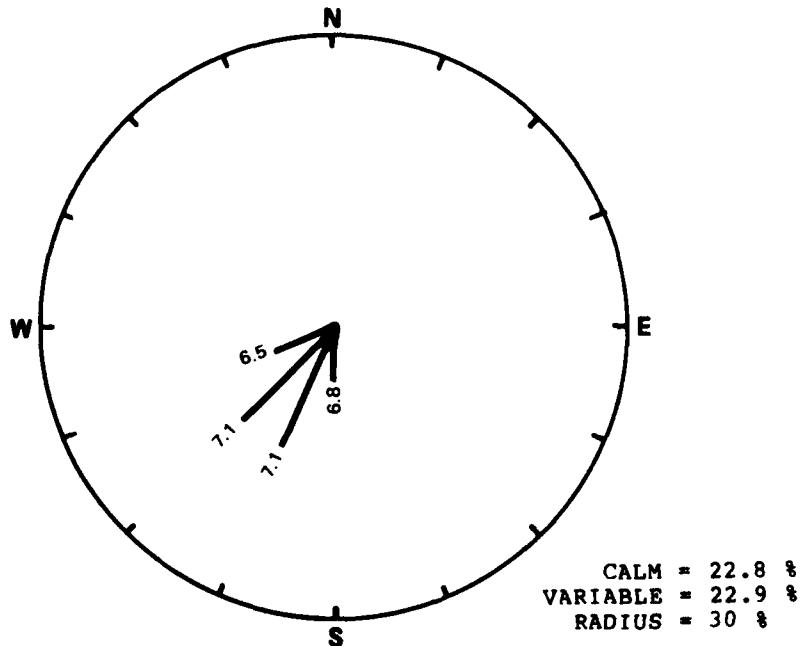


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
FEBRUARY - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	13	3	7	8	10	3	-	44	9.9	1.4
NNE	11	3	5	6	4	-	-	29	8.0	0.9
NE	38	5	5	1	1	-	-	50	3.1	1.6
ENE	20	2	-	-	1	-	-	23	2.5	0.7
E	12	2	-	-	-	-	-	14	2.5	0.4
ESE	31	12	16	2	-	-	-	61	4.7	1.9
SE	14	12	7	1	2	-	-	36	5.3	1.1
SSE	10	4	4	2	-	-	-	20	4.9	0.6
S	35	35	43	15	8	-	-	136	6.8	4.3
SSW	120	126	96	44	37	7	-	430	7.1	13.5
SW	181	94	45	60	48	8	4	440	7.1	13.8
WSW	104	21	11	14	24	5	2	181	6.5	5.7
W	21	2	7	3	7	2	5	47	9.6	1.5
WNW	55	10	7	4	2	-	-	78	3.6	2.4
NW	36	8	15	12	10	1	-	82	6.6	2.6
NNW	6	15	17	17	10	-	-	65	9.3	2.0
VRBL	674	53	3	-	-	-	-	730	2.1	22.9
CALM	727	-	-	-	-	-	-	727	0.0	22.8
TOT	2108	407	288	189	164	26	11	3193	4.1	99.9



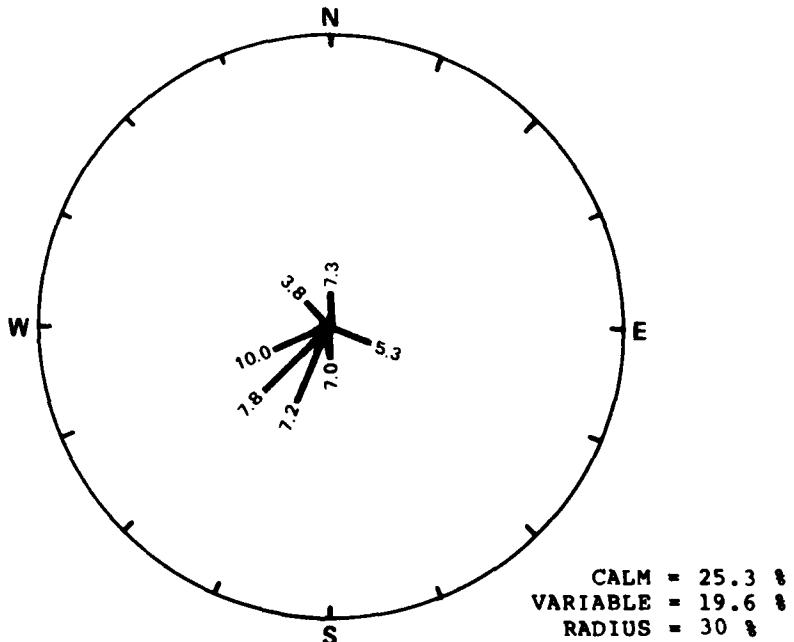
NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
FEBRUARY - 1964 TO 1982

HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	66	5	3	12	15	7	3	111	7.3	3.5
NNE	41	5	5	5	4	-	-	60	4.7	1.9
NE	75	2	1	-	1	-	-	79	2.0	2.5
ENE	31	9	3	3	-	-	-	46	3.9	1.4
E	37	8	2	2	-	-	-	49	3.4	1.5
ESE	47	51	36	9	-	-	-	143	5.3	4.5
SE	14	11	9	3	-	-	-	37	5.4	1.2
SSE	6	7	5	4	2	-	-	24	7.1	0.7
S	32	27	22	12	6	3	1	103	7.0	3.2
SSW	89	74	40	34	34	2	-	273	7.2	8.5
SW	136	53	24	34	43	19	4	313	7.8	9.8
WSW	90	11	15	10	37	22	14	199	10.0	6.2
W	35	3	5	4	16	10	5	78	10.6	2.4
WNW	68	6	6	4	2	3	-	89	3.9	2.8
NW	80	13	9	11	2	-	-	115	3.8	3.6
NNW	20	6	7	11	4	2	-	50	7.3	1.6
VRBL	581	37	9	1	-	-	-	628	2.0	19.6
CALM	811	-	-	-	-	-	-	811	0.0	25.3
TOT	2259	328	201	159	166	68	27	3208	4.1	100.2



NWC TP 6572

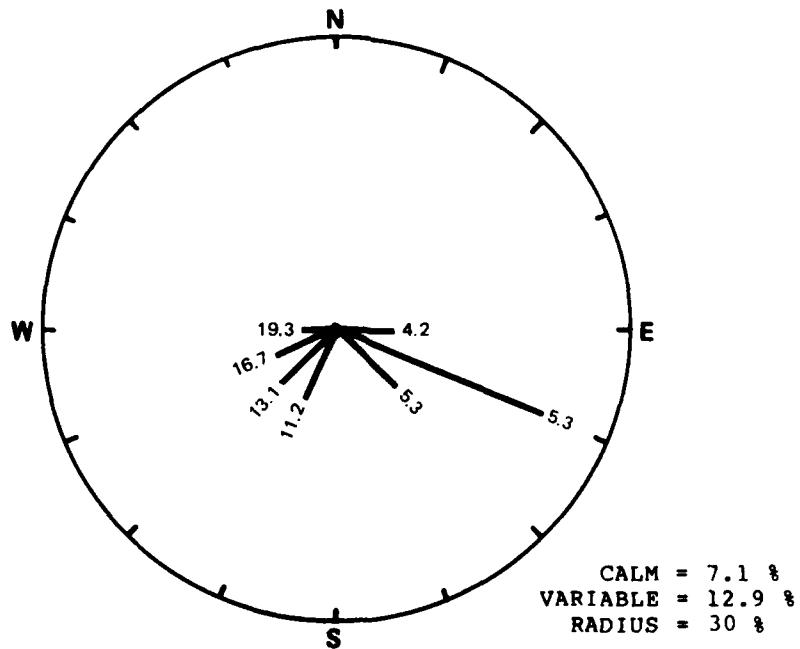
WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS

FEBRUARY - 1964 TO 1982

HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	32	3	6	9	9	10	8	77	10.8	2.4
NNE	33	5	4	4	12	8	-	66	8.5	2.1
NE	43	5	4	7	8	-	-	67	5.7	2.1
ENE	52	13	13	7	2	-	-	87	4.7	2.7
E	102	37	12	8	2	-	-	161	4.2	5.0
ESE	268	262	174	38	7	-	-	749	5.3	23.3
SE	86	99	63	15	-	-	-	263	5.3	8.2
SSE	17	19	17	5	1	-	-	59	6.1	1.8
S	23	16	14	12	3	-	-	68	6.3	2.1
SSW	32	23	53	64	65	9	3	249	11.2	7.8
SW	33	14	36	58	77	27	9	254	13.1	7.9
WSW	19	8	14	23	76	43	25	208	16.7	6.5
W	5	5	3	16	24	25	30	108	19.3	3.4
WNW	19	8	2	10	12	7	6	64	11.8	2.0
NW	35	10	4	1	4	-	-	54	4.2	1.7
NNW	15	5	7	3	3	2	1	36	7.8	1.1
VRBL	383	23	8	-	-	-	-	414	2.1	12.9
CALM	228	-	-	-	-	-	-	228	0.0	7.1
TOT	1425	555	434	280	305	131	82	3212	7.1	100.1



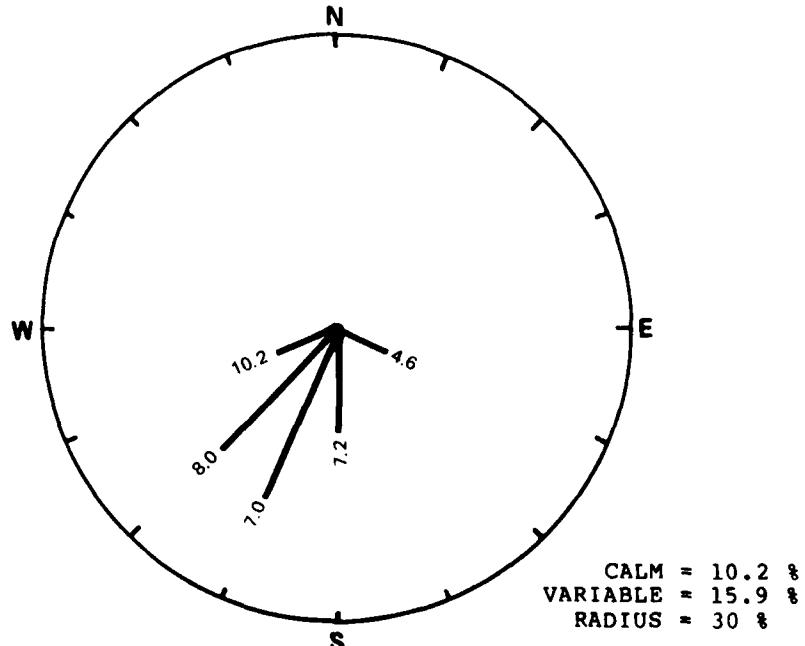
NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
FEBRUARY - 1964 TO 1982

HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	11	3	2	13	11	3	1	44	11.3	1.4
NNE	7	3	5	3	3	1	3	25	10.6	0.8
NE	19	11	9	4	-	-	-	43	4.8	1.3
ENE	13	3	4	8	-	-	-	28	6.2	0.9
E	25	5	5	1	1	-	-	37	4.2	1.2
ESE	73	36	31	6	-	-	-	146	4.6	4.6
SE	34	19	26	8	1	-	-	88	5.5	2.7
SSE	13	8	5	1	-	-	-	27	4.7	0.8
S	71	72	126	64	12	-	-	345	7.2	10.8
SSW	175	180	121	81	43	10	-	610	7.0	19.0
SW	169	125	95	90	74	15	3	571	8.0	17.8
WSW	61	29	24	40	38	16	10	218	10.2	6.8
W	8	4	7	9	12	3	2	45	11.9	1.4
WNW	21	5	4	12	7	-	-	49	7.5	1.5
NW	11	1	7	4	19	2	1	45	11.6	1.4
NNW	4	3	10	12	16	-	-	45	12.0	1.4
VRBL	459	46	3	1	-	-	-	509	2.3	15.9
CALM	328	-	-	-	-	-	-	328	0.0	10.2
TOT	1502	553	484	357	237	50	20	3203	6.0	99.9

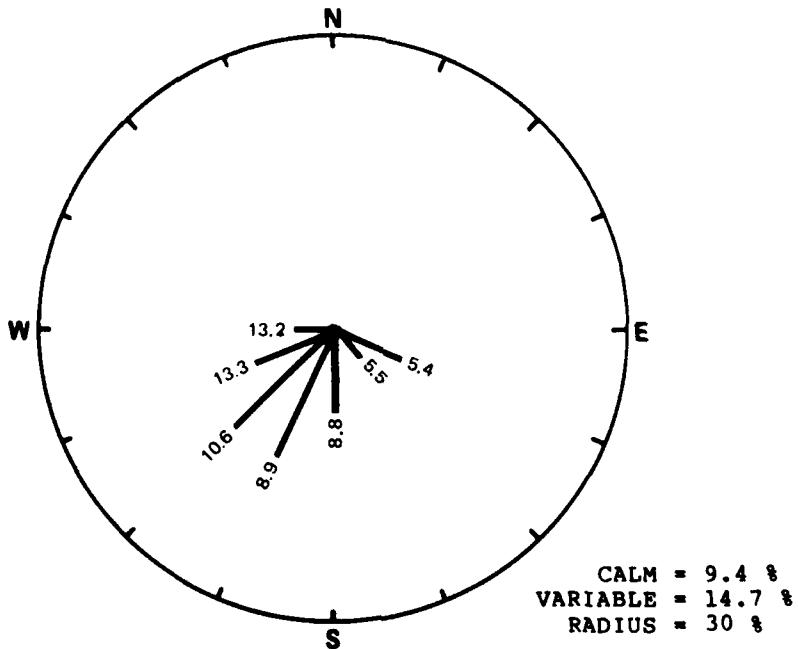


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MARCH - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	76	11	16	32	51	11	2	199	9.6	1.4
NNE	46	10	21	20	29	7	-	133	9.3	0.9
NE	103	22	27	21	7	5	5	190	6.0	1.3
ENE	84	35	21	5	1	-	-	146	4.2	1.0
E	134	95	32	11	-	-	-	272	4.4	1.9
ESE	379	402	252	84	11	-	-	1128	5.4	8.0
SE	173	219	139	43	-	-	-	574	5.5	4.1
SSE	72	71	56	20	2	-	-	221	5.8	1.6
S	176	276	494	228	52	11	1	1238	7.8	8.8
SSW	348	508	505	345	282	66	15	2069	8.9	14.7
SW	363	312	310	421	426	122	40	1994	10.6	14.1
WSW	264	97	86	155	296	182	102	1182	13.3	8.4
W	88	32	57	90	107	57	46	477	13.2	3.4
WNW	109	33	70	45	57	25	11	350	9.5	2.5
NW	106	34	54	40	33	11	4	282	7.9	2.0
NNW	38	32	46	70	47	10	4	247	10.6	1.8
VRBL	1790	236	40	1	1	-	-	2068	2.5	14.7
CALM	1325	-	-	-	-	-	-	1325	0.0	9.4
TOT	5674	2425	2226	1631	1402	507	230	14095	8.0	100.0

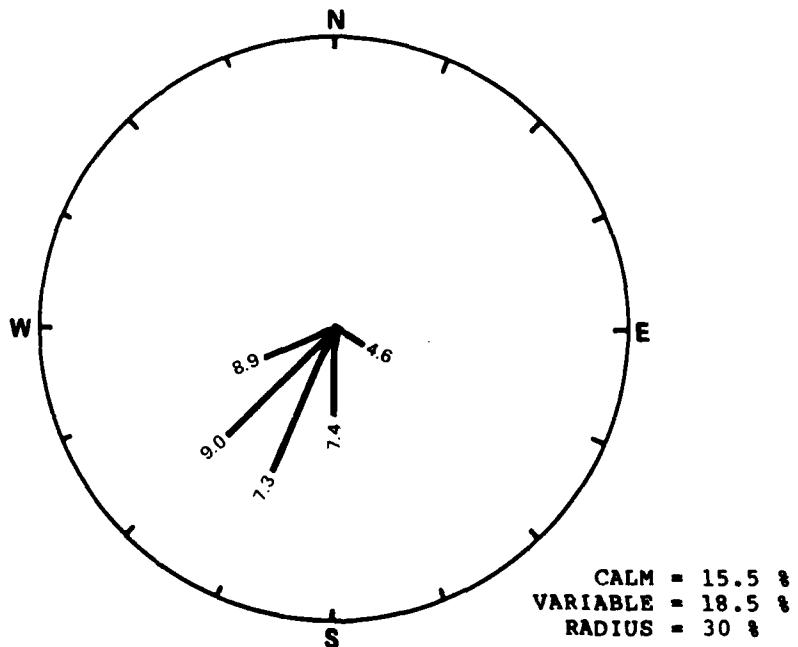


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MARCH - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25		
N	10	4	5	11	3	2	-	35	8.9
NNE	7	3	4	4	1	1	-	20	7.7
NE	16	5	4	2	1	-	-	28	4.5
ENE	19	1	1	-	-	-	-	21	2.5
E	20	6	-	-	-	-	-	26	2.8
ESE	57	38	30	1	-	-	-	126	4.6
SE	27	16	14	2	-	-	-	59	4.9
SSE	16	10	10	3	1	-	-	40	5.5
S	66	72	103	48	22	3	-	314	7.4
SSW	131	175	130	73	46	6	1	562	7.3
SW	135	111	85	109	82	26	6	554	9.0
WSW	93	31	23	41	49	11	3	251	8.9
W	27	5	13	22	11	2	3	83	9.4
WNW	34	8	12	9	1	2	1	67	5.8
NW	26	9	17	12	8	-	-	72	7.2
NNW	1	8	12	28	16	2	-	67	11.8
VRBL	574	71	4	1	-	-	-	650	2.3
CALM	545	-	-	-	-	-	-	545	0.0
TOT	1804	573	467	366	241	55	14	3520	5.5
									100.0

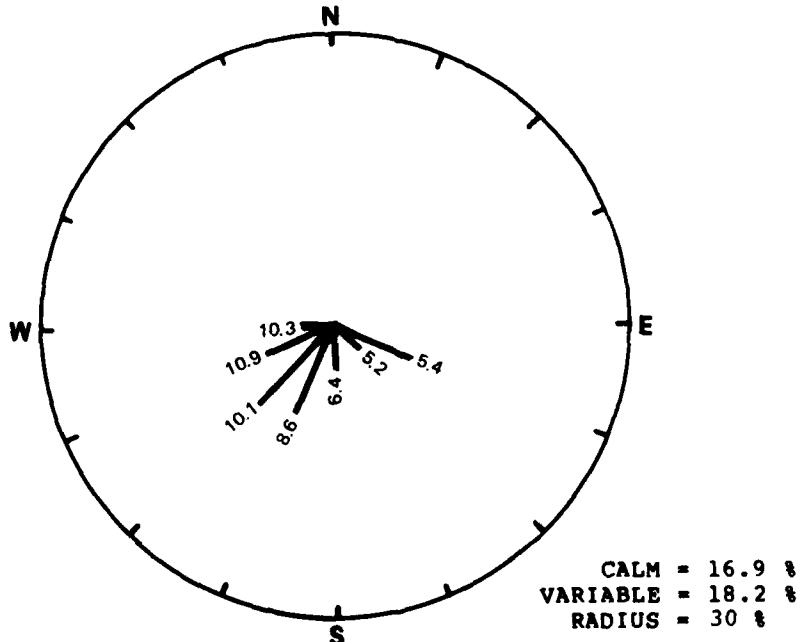


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MARCH - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	20-24				
N	45	2	3	7	20	4	1	82	8.1	2.3
NNE	27	3	1	7	9	3	-	50	8.0	1.4
NE	53	8	4	3	-	2	2	72	4.2	2.0
ENE	28	5	3	1	1	-	-	38	3.6	1.1
E	39	36	7	5	-	-	-	87	4.6	2.5
ESE	108	97	67	26	1	-	-	299	5.4	8.5
SE	43	31	25	9	-	-	-	108	5.2	3.1
SSE	16	10	3	-	-	-	-	29	4.0	0.8
S	51	44	24	25	7	-	-	151	6.4	4.3
SSW	90	76	56	55	57	9	4	347	8.6	9.8
SW	119	49	40	53	94	20	12	387	10.1	11.0
WSW	97	21	13	24	59	34	14	262	10.9	7.4
W	45	12	8	22	20	11	9	127	10.3	3.6
WNW	54	9	16	6	8	7	-	100	6.2	2.8
NW	48	9	13	11	7	3	1	92	6.3	2.6
NNW	13	6	13	17	10	-	-	59	9.1	1.7
VRBL	599	35	6	-	-	-	-	640	2.1	18.2
CALM	595	-	-	-	-	-	-	595	0.0	16.9
TOT	2070	453	302	271	293	93	43	3525	5.5	100.0

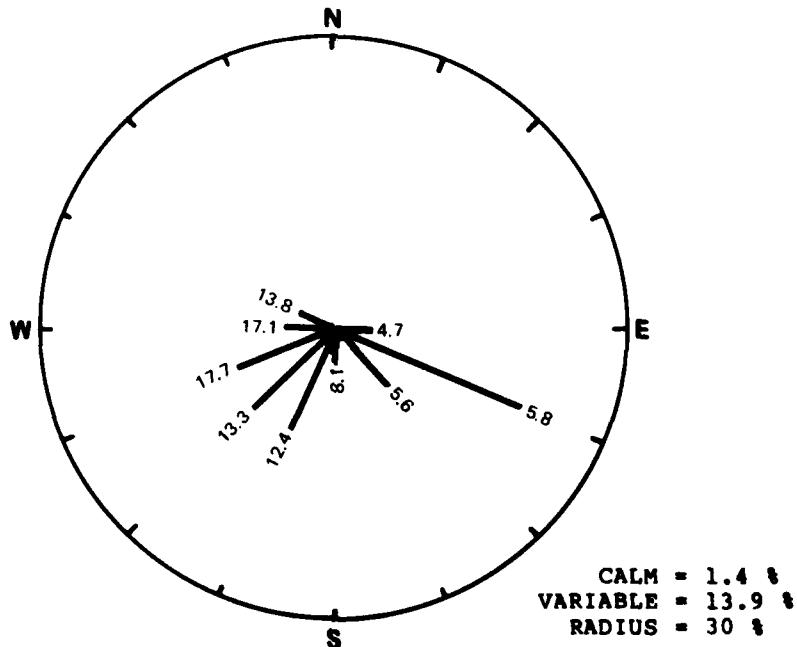


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MARCH - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	17	4	4	7	20	3	-	55	10.8	1.6
NNE	11	1	9	6	17	3	-	47	11.4	1.3
NE	22	5	11	8	5	3	3	57	8.7	1.6
ENE	30	22	12	4	-	-	-	68	4.7	1.9
E	58	44	21	6	-	-	-	129	4.7	3.7
ESE	152	235	125	47	9	-	-	568	5.8	16.1
SE	74	123	69	18	-	-	-	284	5.6	8.0
SSE	29	29	25	14	-	-	-	97	6.1	2.7
S	17	26	47	18	5	4	1	118	8.1	3.3
SSW	25	58	68	94	93	40	9	387	12.4	11.0
SW	32	32	62	96	117	42	18	399	13.3	11.3
WSW	27	18	28	38	97	97	68	373	17.7	10.6
W	7	7	22	24	55	31	30	176	17.1	5.0
WNW	12	13	21	15	34	14	10	119	13.8	3.4
NW	16	8	9	8	10	3	3	57	10.0	1.6
NNW	17	8	9	4	10	5	2	55	10.1	1.6
VRBL	372	92	24	-	1	-	-	489	3.1	13.9
CALM	50	-	-	-	-	-	-	50	0.0	1.4
TOT	968	725	566	407	473	245	144	3528	9.4	100.0

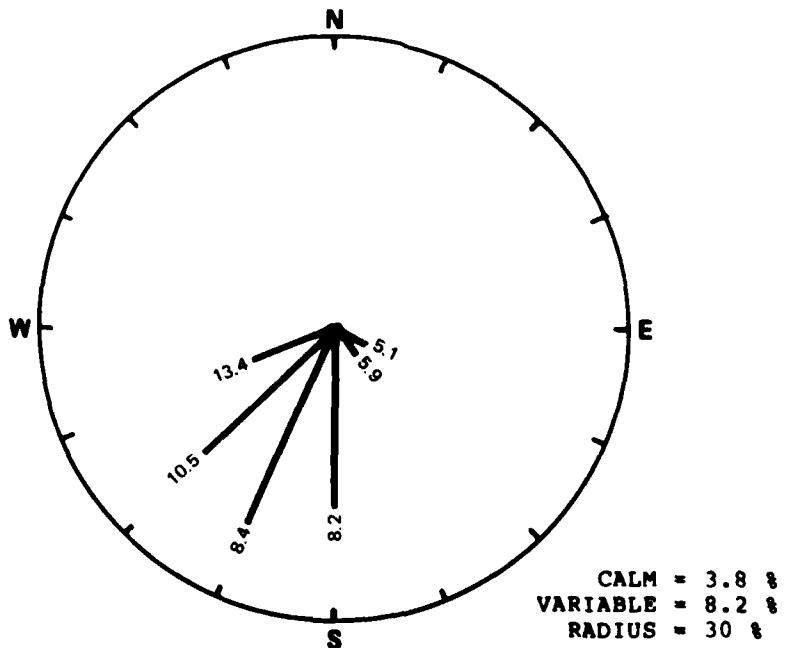


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MARCH - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	4	1	4	7	8	2	1	27	12.6	0.8
NNE	1	3	7	3	2	-	-	16	8.9	0.5
NE	12	4	8	8	1	-	-	33	6.7	0.9
ENE	7	7	5	-	-	-	-	19	5.2	0.5
E	17	9	4	-	-	-	-	30	3.8	0.9
ESE	62	32	30	10	1	-	-	135	5.1	3.8
SE	29	49	31	14	-	-	-	123	5.9	3.5
SSE	11	22	18	3	1	-	-	55	6.3	1.6
S	42	134	320	137	18	4	-	655	8.2	18.6
SSW	102	199	251	123	86	11	1	773	8.4	21.9
SW	77	120	123	163	133	34	4	654	10.5	18.6
WSW	47	27	22	52	91	40	17	296	13.4	8.4
W	9	8	14	22	21	13	4	91	13.2	2.6
WNW	9	3	21	15	14	2	-	64	10.4	1.8
NW	16	8	15	9	8	5	-	61	9.1	1.7
NNW	7	10	12	21	11	3	2	66	11.1	1.9
VRBL	245	38	6	-	-	-	-	289	2.6	8.2
CALM	135	-	-	-	-	-	-	135	0.0	3.8
TOT	832	674	891	587	395	114	29	3522	8.3	100.0

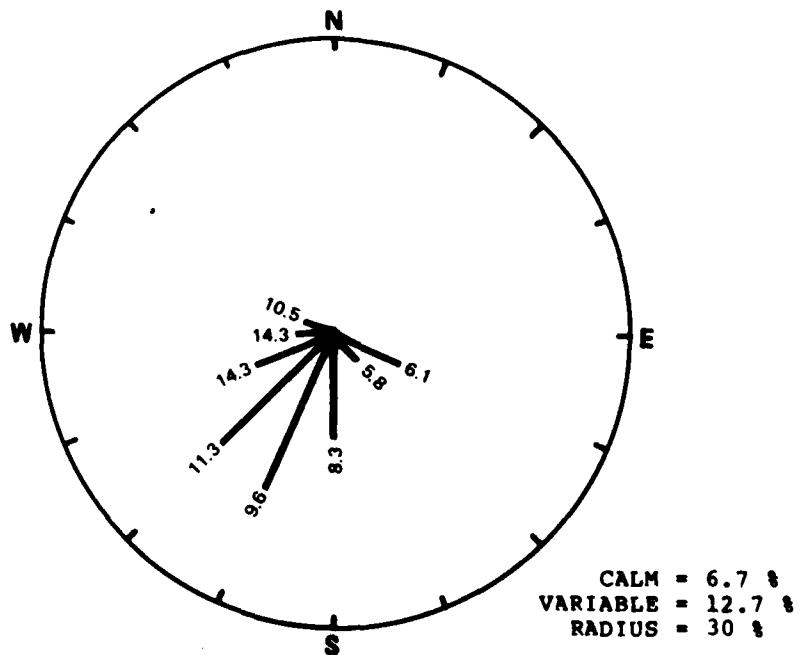


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
APRIL - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25				
N	40	14	24	31	48	7	-	164	10.3	1.2	
NNE	30	18	26	20	19	3	-	116	8.5	0.8	
NE	67	17	23	12	23	4	2	148	7.2	1.1	
ENE	59	25	19	19	9	-	-	131	6.1	1.0	
E	66	61	30	7	-	-	-	164	4.9	1.2	
ESE	248	327	290	86	13	-	-	964	6.1	7.1	
SE	125	201	169	30	3	-	-	528	5.8	3.9	
SSE	48	93	69	10	2	-	-	222	5.8	1.6	
S	150	274	611	338	84	-	-	1457	8.3	10.7	
SSW	272	484	641	481	402	70	11	2361	9.6	17.3	
SW	320	290	389	545	460	154	60	2218	11.3	16.2	
WSW	185	94	111	166	327	160	130	1173	14.3	8.6	
W	64	35	66	107	126	75	49	522	14.3	3.8	
WNW	112	39	70	79	75	28	22	425	10.5	3.1	
NW	78	35	47	47	22	4	1	234	7.5	1.7	
NNW	38	20	47	51	40	5	-	201	9.9	1.5	
VRBL	1372	309	46	7	-	-	-	1734	2.9	12.7	
CALM	910	-	-	-	-	-	-	910	0.0	6.7	
TOT	4184	2336	2678	2036	1653	510	275	13672	8.0	100.2	

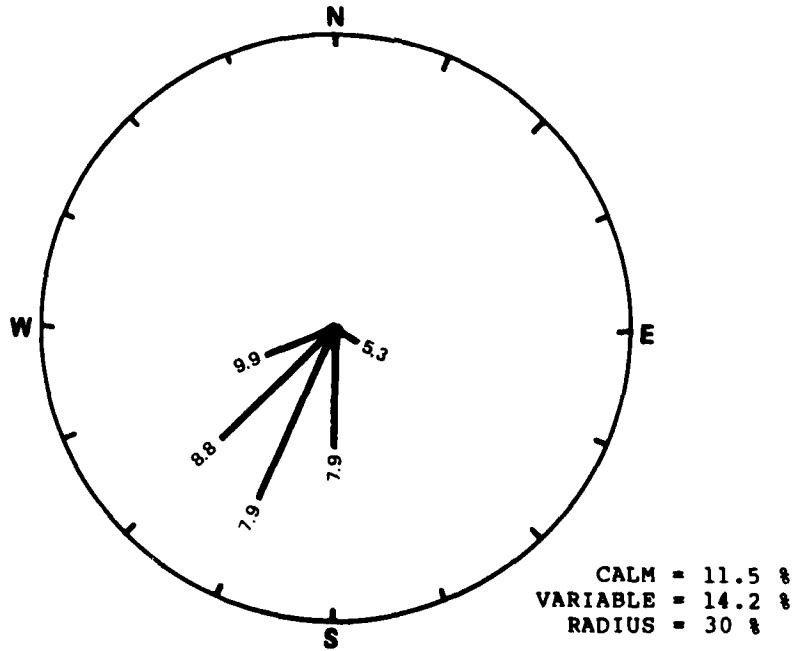


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
APRIL - 1964 TO 1982
HOURS 0000-0600

DIRECTION	1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT	AVG	%TOT
N	10	6	4	8	5	-	-	33	7.9	1.0
NNE	4	1	4	4	-	-	-	13	7.2	0.4
NE	19	-	2	-	3	-	-	24	4.6	0.7
ENE	15	1	-	-	-	-	-	16	1.5	0.5
E	18	5	-	1	-	-	-	24	3.4	0.7
ESE	49	27	27	9	1	-	-	113	5.3	3.3
SE	28	16	10	5	1	-	-	60	5.1	1.8
SSE	12	8	11	2	-	-	-	33	5.5	0
S	59	78	174	83	22	-	-	416	7.9	12.2
SSW	113	192	163	117	66	2	1	654	7.9	19.1
SW	130	118	103	128	85	13	1	578	8.8	16.9
WSW	80	29	30	47	62	15	3	266	9.9	7.8
W	27	11	9	12	11	-	2	72	8.1	2.1
WNW	32	11	22	21	10	2	1	99	7.9	2.9
NW	27	10	11	17	9	-	-	74	7.3	2.2
NNW	9	9	15	19	12	-	-	64	9.8	1.9
VRBL	439	36	8	3	-	-	-	486	2.4	14.2
CALM	392	-	-	-	-	-	-	392	0.0	11.5
TOT	1463	558	593	476	287	32	8	3417	6.3	100.1

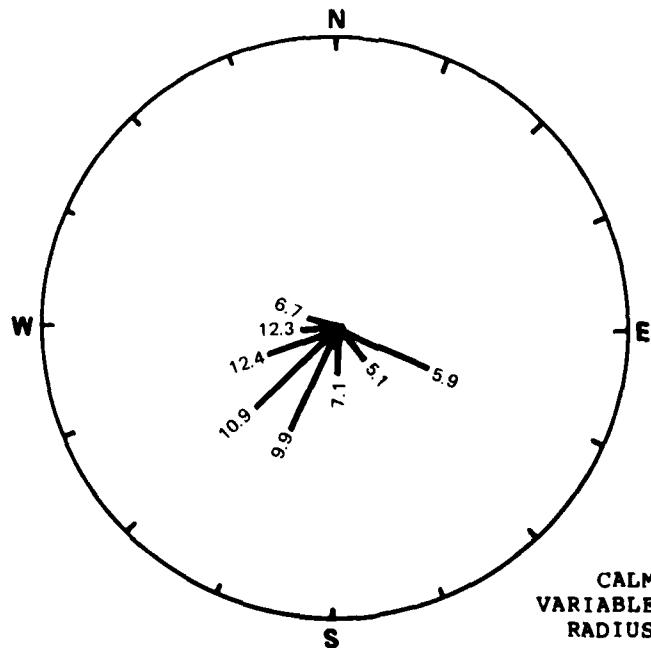


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
APRIL - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	27	3	10	8	23	4	-	75	9.8	2.2
NNE	19	5	6	3	6	1	-	40	6.4	1.2
NE	39	7	3	2	7	1	2	61	5.6	1.8
ENE	27	9	4	3	1	-	-	44	4.5	1.3
E	23	13	9	1	-	-	-	46	4.6	1.3
ESE	103	123	116	30	2	-	-	374	5.9	10.9
SE	49	52	36	5	-	-	-	142	5.1	4.2
SSE	23	28	11	3	-	-	-	65	4.9	1.9
S	42	38	24	22	14	-	-	140	7.1	4.1
SSW	83	68	49	65	96	9	5	375	9.9	11.0
SW	103	45	44	57	94	36	11	390	10.9	11.4
WSW	77	23	13	22	53	27	30	245	12.4	7.2
W	27	8	12	18	21	18	7	111	12.3	3.2
WNW	56	7	14	6	11	6	1	101	6.7	3.0
NW	41	15	17	11	5	1	-	90	5.9	2.6
NNW	22	3	13	9	14	4	-	65	9.5	1.9
VRBL	530	73	6	2	-	-	-	611	2.4	17.9
CALM	441	-	-	-	-	-	-	441	0.0	12.9
TOT	1732	520	387	267	347	107	56	3416	6.3	100.0



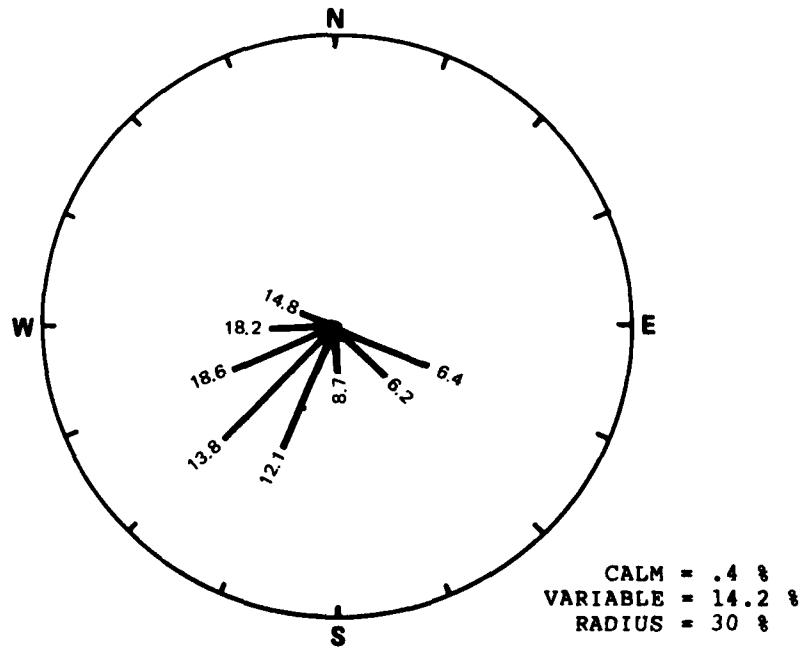
CALM = 12.9 %
VARIABLE = 17.9 %
RADIUS = 30 %

NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
APRIL - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	4	6	7	7	3	-	27	12.5	0.8
NNE	4	9	12	6	11	2	-	44	10.4	1.3
NE	6	8	15	5	12	2	-	48	9.9	1.4
ENE	14	13	8	12	8	-	-	55	8.1	1.6
E	17	36	15	4	-	-	-	72	5.5	2.1
ESE	64	141	112	38	5	-	-	360	6.4	10.5
SE	29	104	98	13	1	-	-	245	6.2	7.2
SSE	11	43	28	3	1	-	-	86	6.0	2.5
S	14	28	65	28	17	-	-	152	8.7	4.4
SSW	19	50	116	123	118	39	3	468	12.1	13.7
SW	29	61	91	135	144	71	37	568	13.8	16.6
WSW	14	25	22	38	119	77	88	383	18.6	11.2
W	7	6	14	45	65	50	37	224	18.2	6.6
WNW	14	11	16	28	35	14	19	137	14.8	4.0
NW	5	6	3	1	4	1	-	20	8.5	0.6
NNW	1	6	11	8	6	-	-	32	9.6	0.9
VRBL	291	167	26	2	-	-	-	486	3.8	14.2
CALM	12	-	-	-	-	-	-	12	0.0	0.4
TOT	551	718	658	496	553	259	184	3419	10.8	100.0

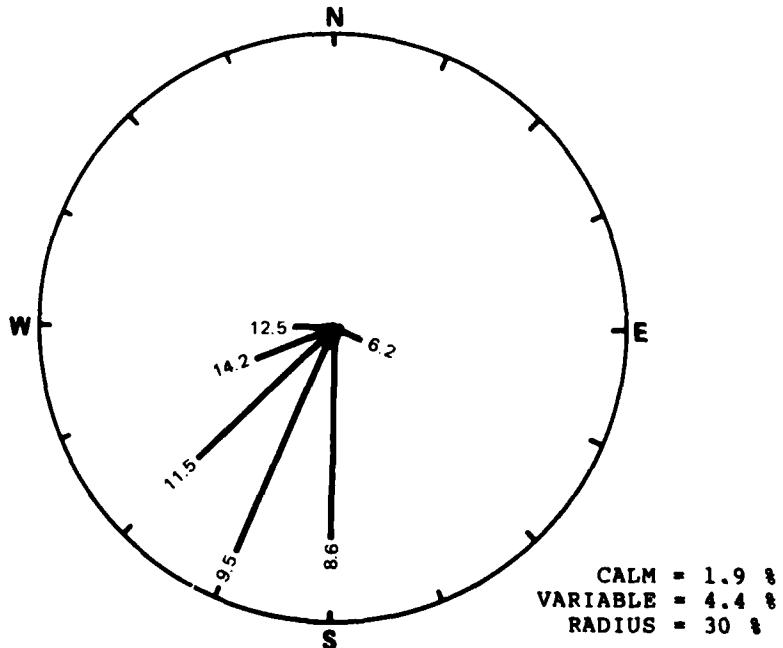


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
APRIL - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	3	1	4	8	13	-	-	29	12.4	0.8
NNE	3	3	4	7	2	-	-	19	9.1	0.6
NE	3	2	3	5	1	1	-	15	9.2	0.4
ENE	3	2	7	4	-	-	-	16	7.8	0.5
E	8	7	6	1	-	-	-	22	5.1	0.6
ESE	32	36	35	9	5	-	-	117	6.2	3.4
SE	19	29	25	7	1	-	-	81	6.1	2.4
SSE	2	14	19	2	1	-	-	38	7.1	1.1
S	35	130	348	205	31	-	-	749	8.6	21.9
SSW	57	174	313	176	122	20	2	864	9.5	25.3
SW	58	66	151	225	137	34	11	682	11.5	19.9
WSW	14	17	46	59	93	41	9	279	14.2	8.2
W	3	10	31	32	29	7	3	115	12.5	3.4
WNW	10	10	18	24	19	6	1	88	11.1	2.6
NW	5	4	16	18	4	2	1	50	10.3	1.5
NNW	6	2	8	15	8	1	-	40	10.9	1.2
VRBL	112	33	6	-	-	-	-	151	3.0	4.4
CALM	65	-	-	-	-	-	-	65	0.0	1.9
TOT	438	540	1040	797	466	112	27	3420	9.6	100.1

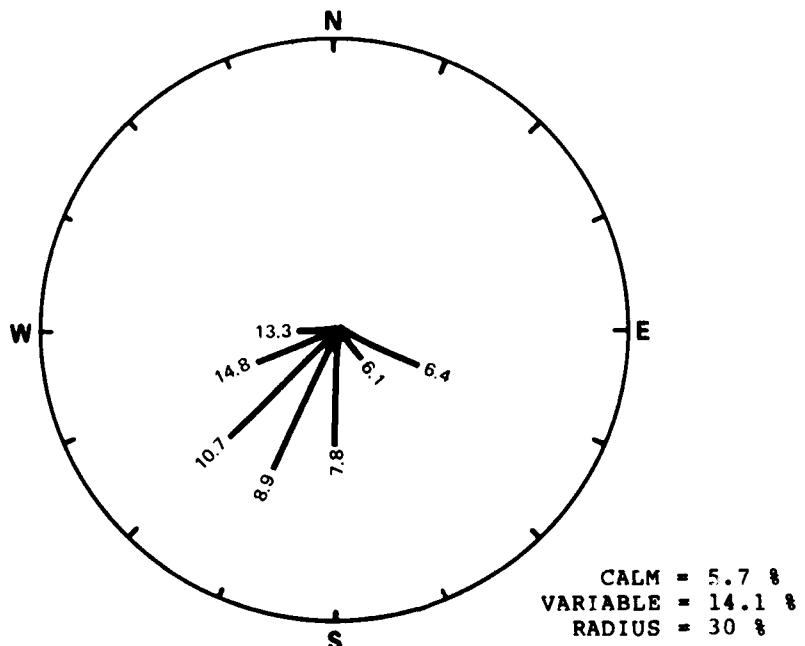


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MAY - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25				
N	24	10	17	21	34	7	-	113	10.8	0.8	
NNE	12	10	14	5	11	1	1	54	9.0	0.4	
NE	53	21	21	7	5	-	-	107	5.1	0.8	
ENE	47	26	22	8	1	-	-	104	5.0	0.7	
E	70	69	59	20	5	-	-	223	5.9	1.6	
ESE	268	451	465	144	14	-	-	1342	6.4	9.5	
SE	140	193	184	52	6	1	-	576	6.1	4.1	
SSE	81	130	88	24	3	1	1	328	5.9	2.3	
S	148	344	854	298	38	2	-	1684	7.8	11.9	
SSW	267	518	691	445	255	49	17	2242	8.9	15.9	
SW	248	317	539	525	391	93	58	2171	10.7	15.4	
WSW	150	104	150	207	292	172	182	1257	14.8	8.9	
W	50	43	77	119	112	48	37	486	13.3	3.4	
WNW	83	41	70	88	81	16	10	389	10.3	2.8	
NW	29	17	26	28	26	8	9	143	11.0	1.0	
NNW	18	12	18	33	19	3	-	103	10.2	0.7	
VRBL	1425	469	88	4	-	-	-	1986	3.1	14.1	
CALM	803	-	-	-	-	-	-	803	0.0	5.7	
TOT	3916	2775	3383	2028	1293	401	315	14111	8.0	100.0	

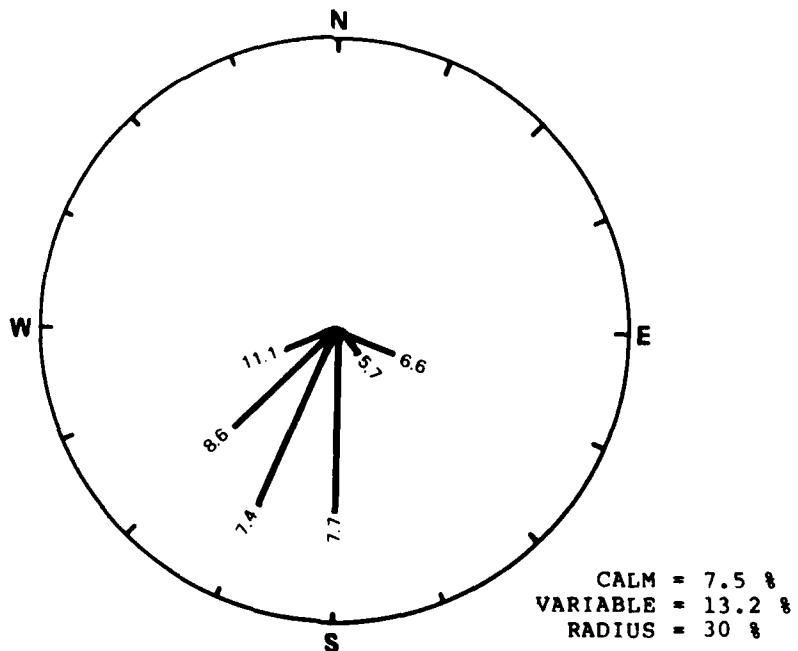


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MAY - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	3	-	7	4	3	-	-	17	9.4	0.5
NNE	1	2	2	1	-	-	-	6	6.6	0.2
NE	12	3	1	-	-	-	-	16	2.8	0.5
ENE	8	1	1	1	-	-	-	11	3.6	0.3
E	20	4	4	-	-	-	-	28	3.5	0.8
ESE	73	48	74	42	3	-	-	240	6.6	6.8
SE	40	31	26	12	2	-	-	111	5.7	3.1
SSE	14	23	11	4	1	-	-	53	5.8	1.5
S	56	135	353	104	9	1	-	658	7.7	18.6
SSW	94	230	230	107	31	4	-	696	7.4	19.7
SW	100	108	137	113	64	7	2	531	8.6	15.0
WSW	50	34	23	27	38	22	13	207	11.1	5.9
W	8	12	18	21	18	2	2	81	10.9	2.3
WNW	31	8	17	9	4	2	2	73	7.1	2.1
NW	9	5	11	6	3	2	2	38	9.5	1.1
NNW	3	3	8	13	6	1	-	34	10.8	1.0
VRBL	416	38	11	-	-	-	-	465	2.5	13.2
CALM	264	-	-	-	-	-	-	264	0.0	7.5
TOT	1202	685	934	464	182	41	21	3529	6.6	100.1

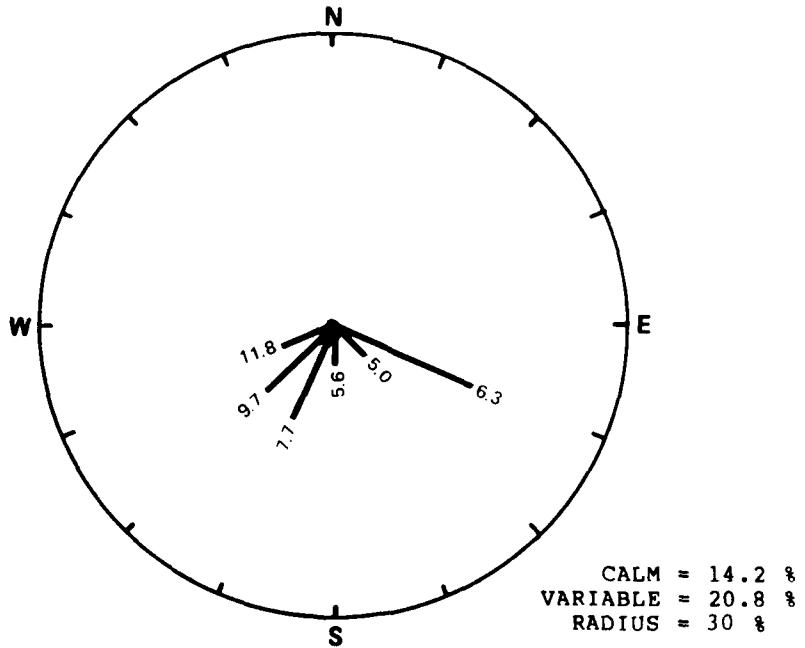


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MAY - 1964 TO 1982
HOURS 0600-1200

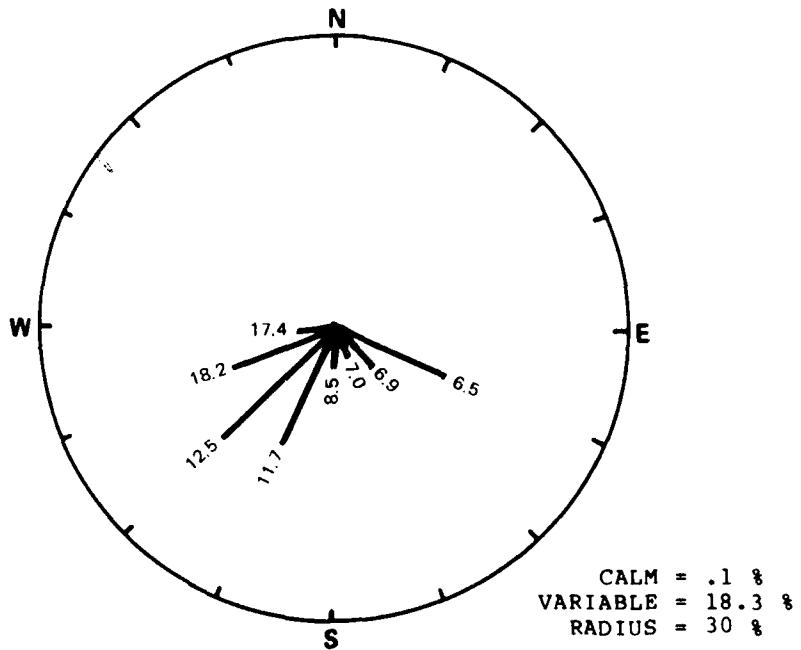
DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25		
N	17	2	2	7	16	4	-	48	10.4
NNE	7	1	1	-	1	-	-	10	4.2
NE	27	6	6	-	-	-	-	39	3.2
ENE	22	4	-	1	-	-	-	27	3.1
E	38	25	21	4	3	-	-	91	5.3
ESE	115	180	204	49	6	-	-	554	6.3
SE	55	54	36	3	2	-	-	150	5.0
SSE	43	26	7	2	-	-	-	78	4.2
S	53	40	37	12	2	-	-	144	5.6
SSW	125	80	53	56	39	10	4	367	7.7
SW	103	50	38	58	57	29	7	342	9.7
WSW	80	14	18	12	32	24	31	211	11.8
W	31	8	10	9	12	5	6	81	9.7
WNW	38	19	17	10	5	2	1	92	6.3
NW	17	1	4	8	6	-	-	36	7.3
NNW	8	1	1	5	4	-	-	19	8.4
VRBL	640	84	6	1	-	-	-	731	2.3
CALM	499	-	-	-	-	-	-	499	0.0
TOT	1918	595	461	237	185	74	49	3519	5.3
									100.0



NWC TP 6572

WEATHER STATION NAME: I.O.B.
 SUMMARY WIND ROSE - LIKE MONTHS
 MAY - 1964 TO 1982
 HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	2	4	7	7	10	1	-	31	11.9	0.9
NNE	2	5	3	2	5	1	-	18	10.7	0.5
NE	9	12	8	2	1	-	-	32	6.0	0.9
ENE	10	18	13	2	1	-	-	44	5.9	1.2
E	7	34	29	14	2	-	-	86	7.3	2.4
ESE	54	185	146	42	4	-	-	431	6.5	12.2
SE	27	85	100	26	2	1	-	241	6.9	6.8
SSE	13	56	45	13	2	1	1	131	7.0	3.7
S	8	33	65	34	7	1	-	148	8.5	4.2
SSW	16	62	128	111	107	24	10	458	11.7	13.0
SW	16	81	137	150	124	32	36	576	12.5	16.3
WSW	13	37	32	49	107	69	102	409	18.2	11.6
W	5	8	12	21	38	26	24	134	17.4	3.8
WNW	8	6	14	21	31	5	7	92	13.5	2.6
NW	3	7	4	7	5	3	1	30	11.5	0.8
NNW	4	2	4	6	4	1	-	21	10.9	0.6
VRBL	272	313	61	-	-	-	-	646	4.4	18.3
CALM	2	-	-	-	-	-	-	2	0.0	0.1
TOT	471	948	808	507	450	165	181	3530	10.0	99.9

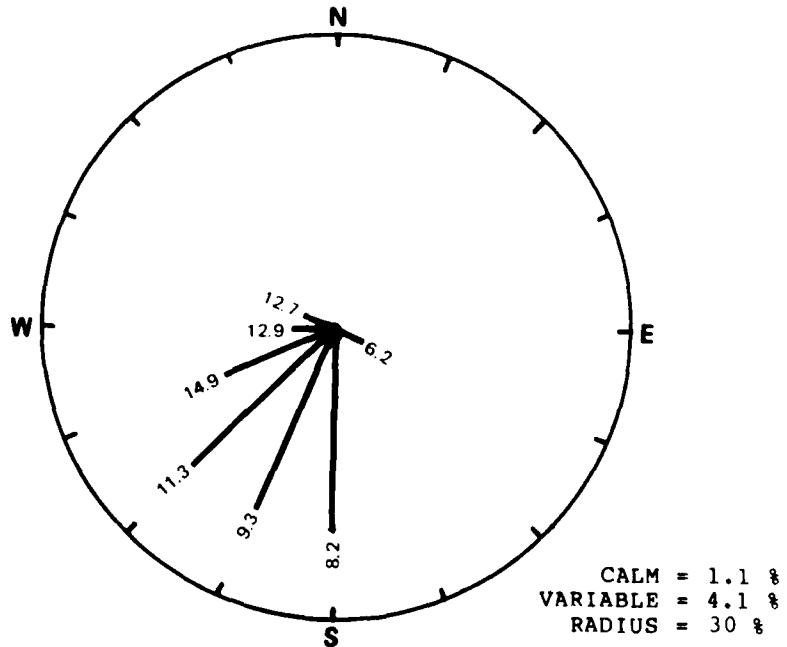


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
MAY - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	2	4	1	3	5	2	-	17	11.1	0.5
NNE	2	2	8	2	5	-	1	20	10.5	0.6
NE	5	-	6	5	4	-	-	20	9.2	0.6
ENE	7	3	8	4	-	-	-	22	6.4	0.6
E	5	6	5	2	-	-	-	18	5.9	0.5
ESE	26	38	41	11	1	-	-	117	6.2	3.3
SE	18	23	22	11	-	-	-	74	6.4	2.1
SSE	11	25	25	5	-	-	-	66	6.1	1.9
S	31	136	399	148	20	-	-	734	8.2	20.8
SSW	32	146	280	171	78	11	3	721	9.3	20.4
SW	29	78	227	204	146	25	13	722	11.3	20.4
WSW	7	19	77	119	115	57	36	430	14.9	12.2
W	6	15	37	68	44	15	5	190	12.9	5.4
WNW	6	8	22	48	41	7	-	132	12.7	3.7
NW	-	4	7	7	12	3	6	39	15.7	1.1
NNW	3	6	5	9	5	1	-	29	10.4	0.8
VRBL	97	34	10	3	-	-	-	144	3.5	4.1
CALM	38	-	-	-	-	-	-	38	0.0	1.1
TOT	325	547	1180	820	476	121	64	3533	10.0	100.1

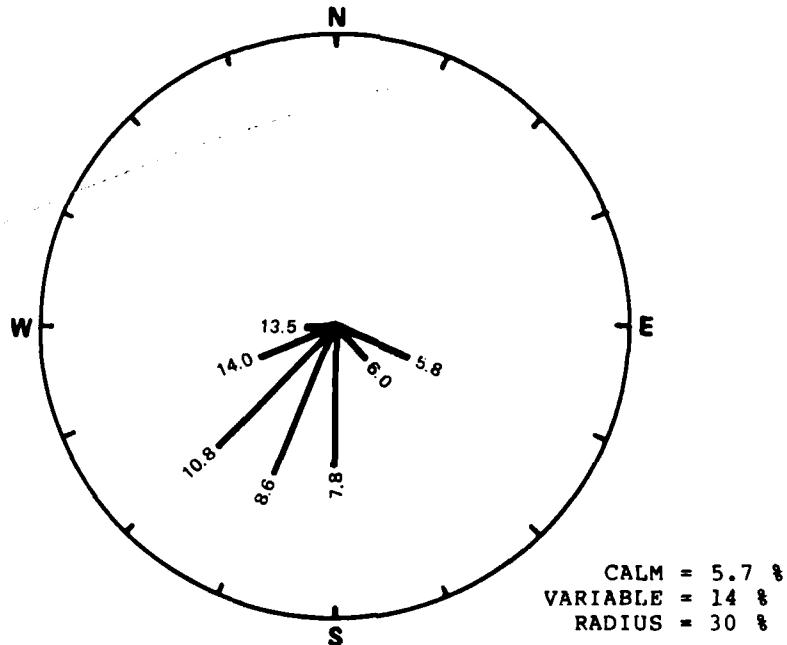


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JUNE - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	20-24				
N	8	2	4	3	7	-	-	24	9.4	0.2
NNE	12	5	9	6	1	-	-	33	6.2	0.2
NE	34	12	9	6	-	-	-	61	4.4	0.4
ENE	36	30	14	3	-	-	-	83	4.6	0.6
E	83	65	31	5	-	-	-	184	4.5	1.4
ESE	278	389	362	68	6	1	-	1104	5.8	8.1
SE	128	179	161	49	2	-	-	519	6.0	3.8
SSE	127	133	95	13	1	-	-	369	5.1	2.7
S	180	354	1025	350	40	1	-	1950	7.8	14.4
SSW	299	453	706	491	229	11	5	2194	8.6	16.2
SW	226	330	592	648	489	96	26	2407	10.8	17.7
WSW	137	95	141	221	328	132	105	1159	14.0	8.5
W	39	20	70	95	125	38	20	407	13.5	3.0
WNW	60	25	39	56	48	6	8	242	10.1	1.8
NW	34	8	9	14	23	7	3	98	10.0	0.7
NNW	15	4	10	10	11	1	-	51	9.2	0.4
VRBL	1439	382	80	2	1	-	-	1904	3.0	14.0
CALM	778	-	-	-	-	-	-	778	0.0	5.7
TOT	3913	2486	3357	2040	1311	293	167	13567	8.0	99.8

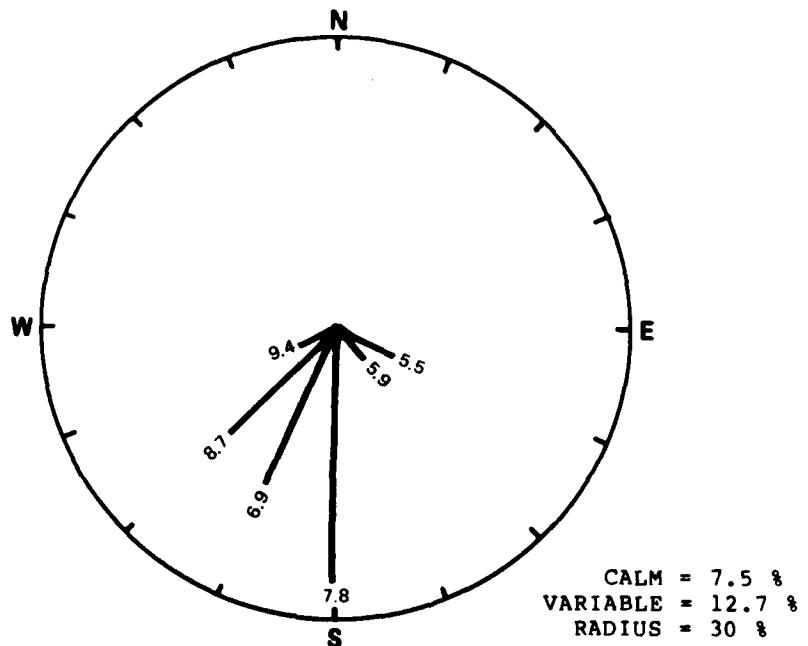


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JUNE - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	1	-	-	1	-	-	-	2	7.5	0.1
NNE	1	-	1	-	-	-	-	2	5.3	0.1
NE	2	2	1	-	-	-	-	5	3.9	0.1
ENE	3	-	-	-	-	-	-	3	2.0	0.1
E	22	7	-	-	-	-	-	29	2.9	0.9
ESE	78	73	74	13	-	-	-	238	5.5	7.0
SE	42	39	38	15	-	-	-	134	5.9	3.9
SSE	32	14	15	2	-	-	-	63	4.8	1.9
S	77	142	512	150	6	1	-	888	7.8	26.1
SSW	112	165	206	91	15	-	-	589	6.9	17.3
SW	82	87	158	121	58	4	-	510	8.7	15.0
WSW	29	22	21	29	20	7	1	129	9.4	3.8
W	10	5	8	17	13	2	-	55	10.9	1.6
WNW	19	1	4	5	10	2	-	41	8.5	1.2
NW	8	1	1	3	5	1	-	19	9.5	0.6
NNW	-	1	2	-	-	-	-	3	6.8	0.1
VRBL	374	53	5	-	-	-	-	432	2.4	12.7
CALM	255	-	-	-	-	-	-	255	0.0	7.5
TOT	1147	612	1046	447	127	17	1	3397	6.3	99.9

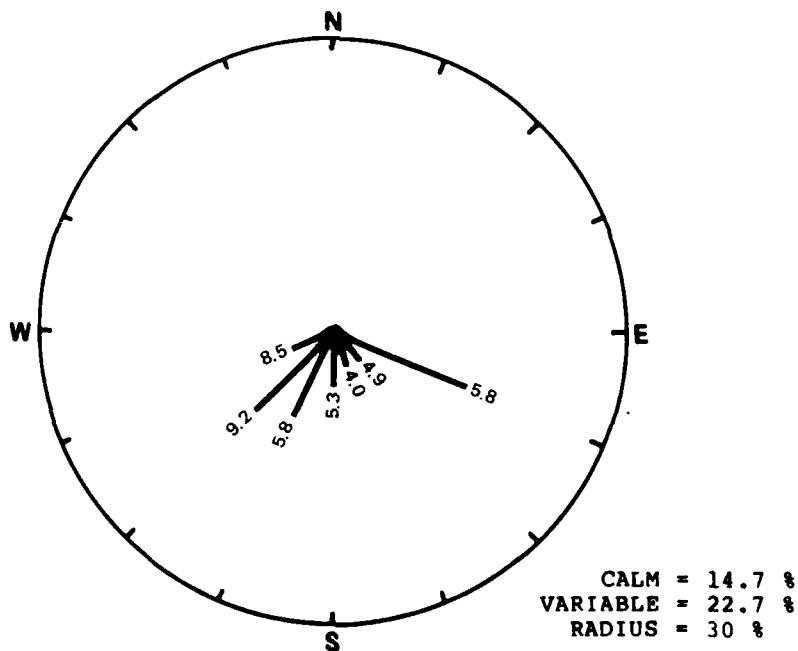


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JUNE - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	7	1	1	1	2	-	-	12	6.6	0.4
NNE	10	-	-	-	-	-	-	10	2.0	0.3
NE	24	2	1	2	-	-	-	29	2.9	0.9
ENE	22	11	1	-	-	-	-	34	3.3	1.0
E	41	32	11	1	-	-	-	85	4.2	2.5
ESE	132	164	179	34	-	-	-	509	5.8	15.0
SE	56	49	33	4	-	-	-	142	4.9	4.2
SSE	69	35	12	1	1	-	-	118	4.0	3.5
S	80	43	46	14	2	-	-	185	5.3	5.5
SSW	148	74	57	41	15	-	-	335	5.8	9.9
SW	105	65	52	65	76	18	1	382	9.2	11.3
WSW	77	16	13	14	25	5	11	161	8.5	4.7
W	21	1	4	4	2	-	2	34	6.6	1.0
WNW	26	5	2	-	2	-	-	35	3.3	1.0
NW	21	5	2	1	5	-	-	34	5.1	1.0
NNW	10	2	2	3	4	1	-	22	8.0	0.6
VRBL	706	58	4	-	1	-	-	769	2.2	22.7
CALM	498	-	-	-	-	-	-	498	0.0	14.7
TOT	2053	563	420	185	135	24	14	3394	4.4	100.2

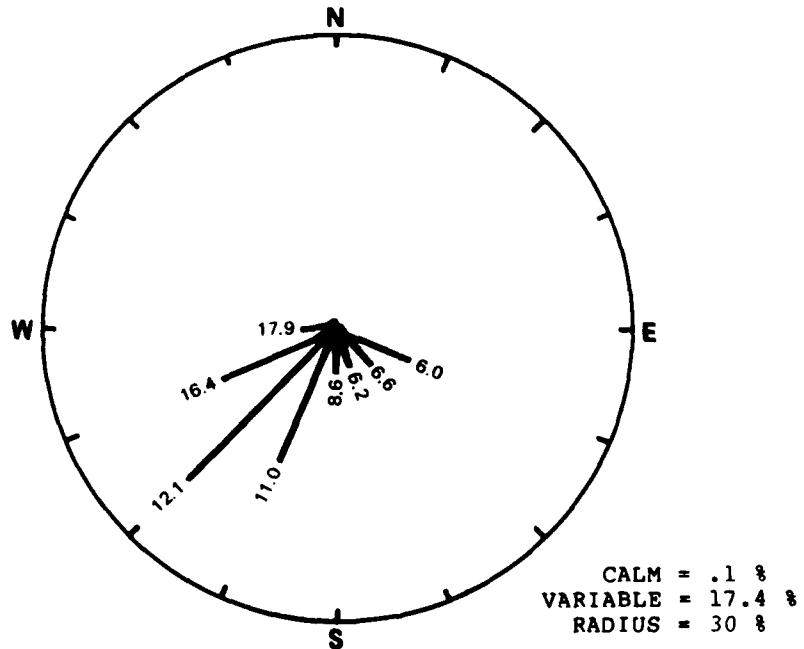


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JUNE - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	-	-	1	5	-	-	6	16.4	0.2
NNE	1	3	4	6	1	-	-	15	8.8	0.4
NE	5	8	6	-	-	-	-	19	5.6	0.6
ENE	5	17	10	2	-	-	-	34	6.0	1.0
E	12	21	17	4	-	-	-	54	5.9	1.6
ESE	49	127	97	16	2	-	-	291	6.0	8.6
SE	18	76	64	17	-	-	-	175	6.6	5.2
SSE	19	64	58	9	-	-	-	150	6.2	4.4
S	5	38	59	41	11	-	-	154	8.6	4.5
SSW	11	67	163	130	118	8	3	500	11.0	14.8
SW	23	105	171	205	173	49	20	746	12.1	22.0
WSW	23	38	35	60	137	71	62	426	16.4	12.6
W	3	4	5	12	57	25	11	117	17.9	3.5
WNW	11	10	10	15	19	3	5	73	12.3	2.2
NW	3	2	4	5	3	2	1	20	11.8	0.6
NNW	4	-	3	3	6	-	-	16	11.0	0.5
VRBL	277	245	65	2	-	-	-	589	4.3	17.4
CALM	2	-	-	-	-	-	-	2	0.0	0.1
TOT	471	825	771	528	532	158	102	3387	9.9	100.2

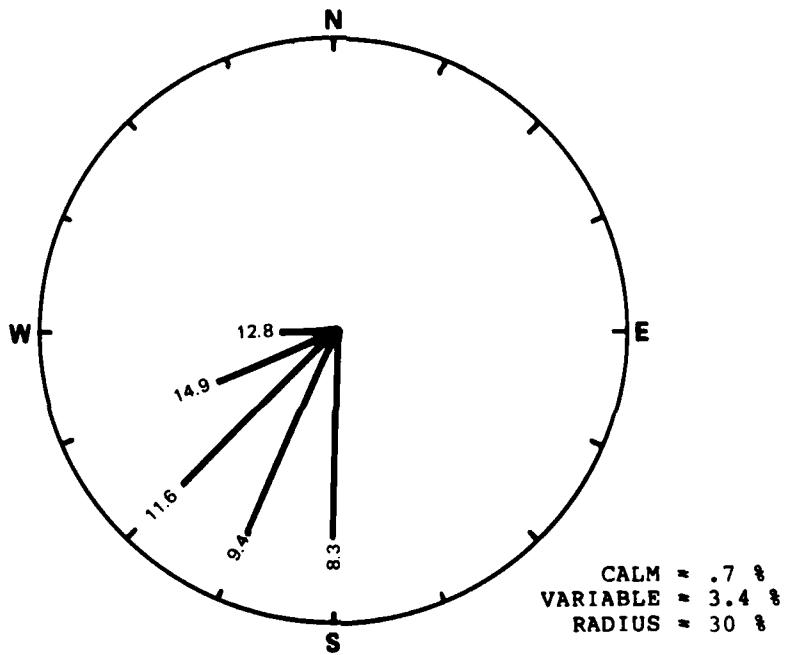


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JUNE - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	1	3	-	-	-	-	4	8.0	0.1
NNE	-	2	4	-	-	-	-	6	7.2	0.2
NE	3	-	1	4	-	-	-	8	7.6	0.2
ENE	6	2	3	1	-	-	-	12	5.0	0.4
E	8	5	3	-	-	-	-	16	4.3	0.5
ESE	19	25	12	5	4	1	-	66	6.5	1.9
SE	12	15	26	13	2	-	-	68	7.3	2.0
SSE	7	20	10	1	-	-	-	38	5.3	1.1
S	18	131	408	145	21	-	-	723	8.3	21.3
SSW	28	147	280	229	81	3	2	770	9.4	22.7
SW	16	73	211	257	182	25	5	769	11.6	22.7
WSW	8	19	72	118	146	49	31	443	14.9	13.1
W	5	10	53	62	53	11	7	201	12.8	5.9
WNW	4	9	23	36	17	1	3	93	11.5	2.7
NW	2	-	2	5	10	4	2	25	15.6	0.7
NNW	1	1	3	4	1	-	-	10	9.8	0.3
VRBL	82	26	6	-	-	-	-	114	3.1	3.4
CALM	23	-	-	-	-	-	-	23	0.0	0.7
TOT	242	486	1120	880	517	94	50	3389	10.2	99.9

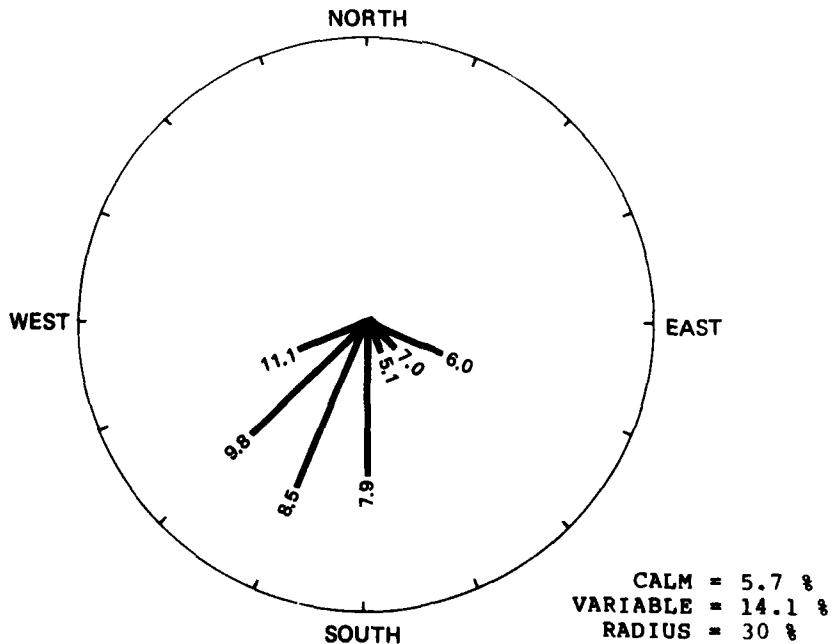


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JULY - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	5	9	4	4	1	-	-	23	7.0	0.2
NNE	19	4	-	1	1	-	-	25	3.5	0.2
NE	32	5	1	3	2	-	-	43	3.9	0.3
ENE	46	22	9	3	2	-	-	82	4.6	0.6
E	57	53	21	3	1	-	-	135	4.7	1.0
ESE	261	372	335	72	8	4	-	1052	6.0	7.5
SE	128	163	165	88	28	-	2	574	7.0	4.1
SSE	192	164	108	13	7	-	-	484	5.1	3.4
S	225	384	1176	447	41	2	-	2275	7.9	16.1
SSW	349	513	945	608	211	18	5	2649	8.5	18.8
SW	288	357	621	637	399	56	6	2364	9.8	16.8
WSW	136	125	158	223	254	40	14	950	11.1	6.7
W	48	34	61	93	66	9	-	311	10.3	2.2
WNW	76	27	41	24	23	3	-	194	7.1	1.4
NW	33	22	16	15	4	2	-	92	6.5	0.7
NNW	20	4	9	12	1	1	-	47	6.8	0.3
VRBL	1553	382	56	2	-	-	-	1993	2.8	14.1
CALM	807	-	-	-	-	-	-	807	0.0	5.7
TOT	4275	2640	3726	2248	1049	135	27	14100	8.0	100.1

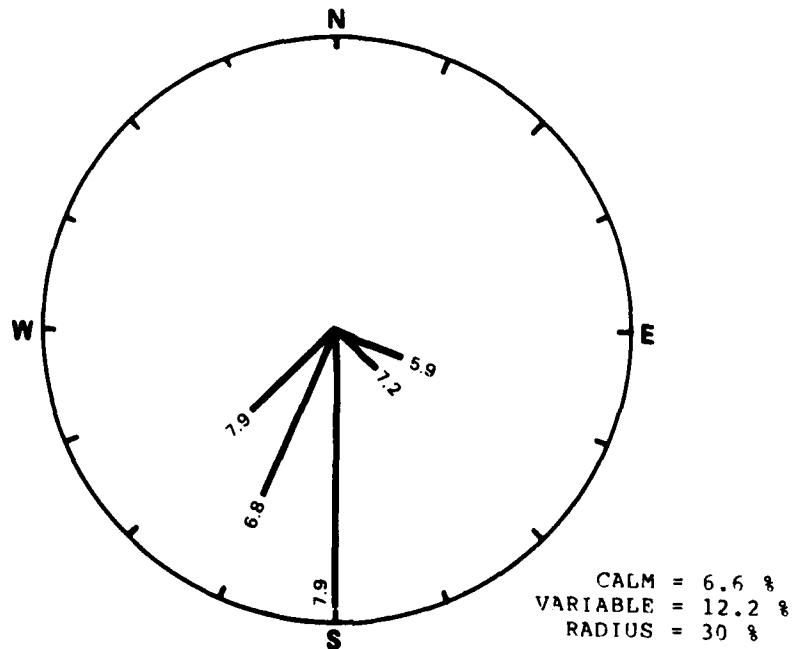


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JULY - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	4	1	1	-	-	-	6	6.5	0.2
NNE	2	2	-	-	-	-	-	4	3.5	0.1
NE	3	2	-	2	-	-	-	7	6.0	0.2
ENE	5	1	1	1	-	-	-	8	5.1	0.2
E	16	13	2	1	1	-	-	33	4.6	0.9
ESE	80	78	87	17	3	-	-	265	5.9	7.5
SE	52	47	59	47	6	-	1	212	7.2	6.0
SSE	37	29	21	1	-	-	-	88	4.8	2.5
S	76	179	561	185	10	-	-	1011	7.9	28.8
SSW	117	185	270	83	6	-	-	661	6.8	18.8
SW	84	91	110	113	25	4	-	427	7.9	12.1
WSW	24	18	8	6	4	-	-	60	6.0	1.7
W	10	6	6	-	-	-	-	22	4.7	0.6
WNW	16	5	3	1	1	-	-	26	4.1	0.7
NW	10	1	2	4	-	-	-	17	5.3	0.5
NNW	3	1	3	-	-	-	-	7	5.0	0.2
VRBL	383	43	4	-	-	-	-	430	2.4	12.2
CALM	232	-	-	-	-	-	-	232	0.0	6.6
TOT	1150	705	1138	462	56	4	1	3516	6.1	100.3

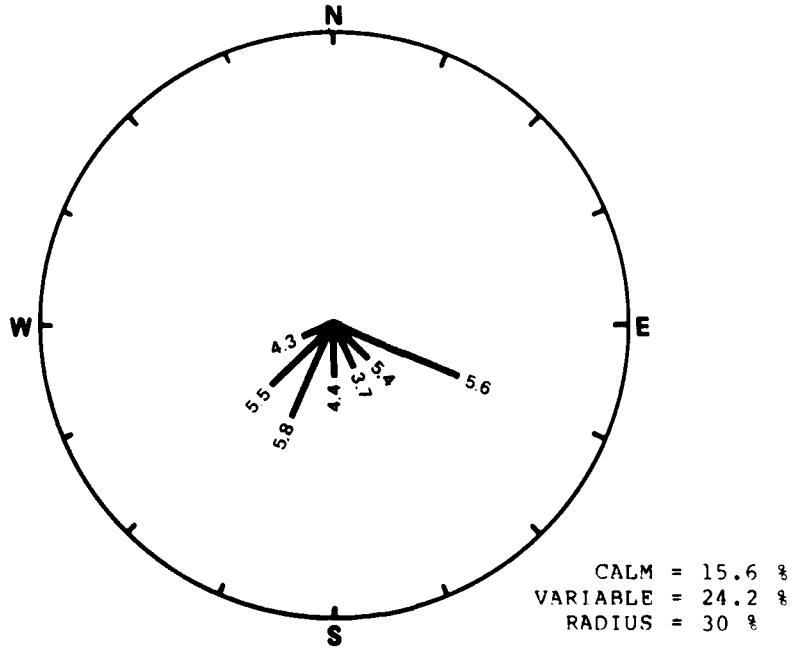


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JULY - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24			
N	5	2	1	2	-	-	10	5.6	0.3
NNE	17	1	-	-	-	-	18	2.3	0.5
NE	22	-	-	-	-	-	22	1.6	0.6
ENE	30	5	1	-	-	-	36	3.1	1.0
E	33	25	7	-	-	-	65	4.2	1.8
ESE	145	172	156	26	1	-	500	5.6	14.2
SE	58	57	40	11	2	-	168	5.4	4.8
SSE	118	42	12	2	-	-	174	3.7	4.9
S	114	38	29	9	1	-	191	4.4	5.4
SSW	169	79	51	43	21	-	363	5.8	10.3
SW	164	69	36	26	21	1	317	5.5	9.0
WSW	82	22	7	7	6	-	124	4.3	3.5
W	27	5	3	1	1	-	37	3.9	1.0
WNW	43	4	3	1	-	-	51	2.7	1.4
NW	15	11	5	-	-	-	31	4.1	0.9
NNW	10	1	2	2	-	-	15	4.2	0.4
VRBL	797	56	2	-	-	-	855	2.1	24.2
CALM	552	-	-	-	-	-	552	0.0	15.6
TOT	2401	589	355	130	53	1	3529	3.5	99.8

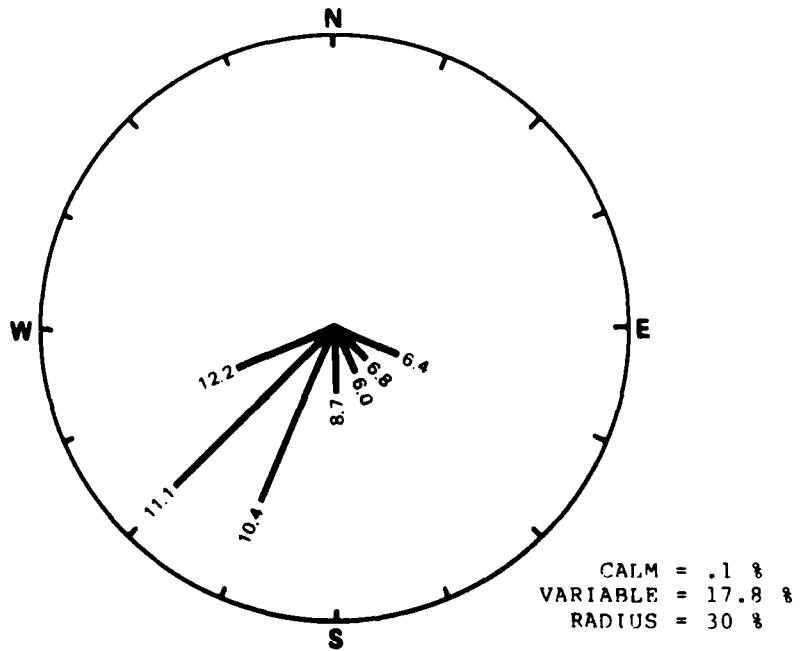


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JULY - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	2	1	-	-	-	-	3	6.5	0.1
NNE	-	-	-	1	-	-	-	1	11.5	0.0
NE	6	3	-	1	2	-	-	12	6.7	0.3
ENE	9	16	6	1	1	-	-	33	5.7	0.9
E	7	12	8	1	-	-	-	28	5.5	0.8
ESE	33	111	86	21	2	1	-	254	6.4	7.2
SE	16	53	46	11	5	-	1	132	6.8	3.7
SSE	31	83	55	3	4	-	-	176	6.0	5.0
S	9	44	105	53	13	1	-	225	8.7	6.4
SSW	24	97	234	207	108	13	4	687	10.4	19.4
SW	25	111	238	233	171	36	4	818	11.1	23.2
WSW	22	62	65	91	116	23	7	386	12.2	10.9
W	7	12	5	19	31	7	-	81	12.9	2.3
WNW	11	8	10	7	5	2	-	43	8.9	1.2
NW	5	4	1	2	2	-	-	14	6.7	0.4
NNW	5	1	3	-	-	-	-	9	5.0	0.3
VRBL	317	266	44	1	-	-	-	628	4.1	17.8
CALM	3	-	-	-	-	-	-	3	0.0	0.1
TOT	530	885	907	652	460	83	16	3533	8.8	100.0

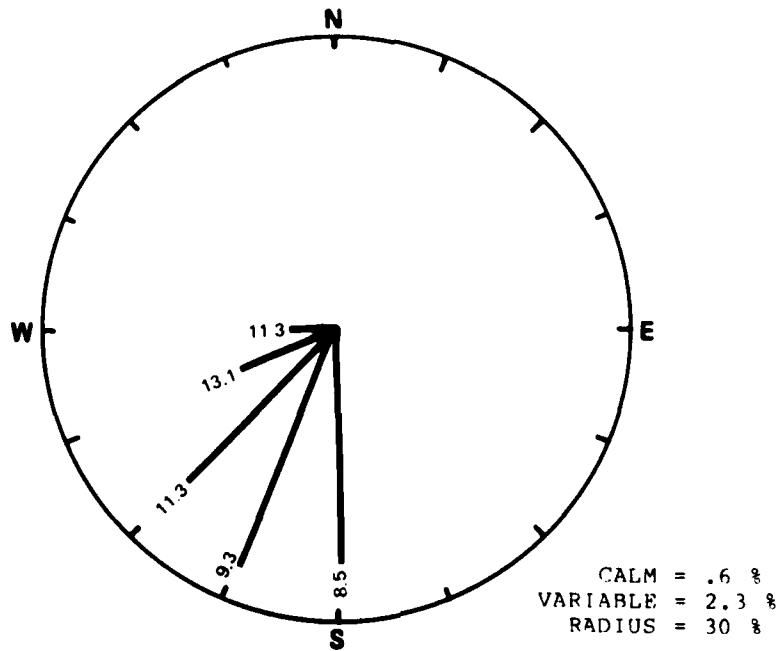


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
JULY - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	-	1	1	1	1	-	-	4	11.5	0.1
NNE	-	1	-	-	1	-	-	2	10.5	0.1
NE	1	-	1	-	-	-	-	2	5.3	0.1
ENE	2	-	1	1	1	-	-	5	7.9	0.1
E	1	3	4	1	-	-	-	9	6.4	0.3
ESE	3	11	6	8	2	3	-	33	9.5	0.9
SE	2	6	20	19	15	-	-	62	10.8	1.8
SSE	6	10	20	7	3	-	-	46	7.8	1.3
S	26	123	481	200	17	1	-	848	8.5	24.1
SSW	39	152	390	275	76	5	1	938	9.3	26.6
SW	15	86	237	265	182	15	2	802	11.3	22.8
WSW	8	23	78	119	128	17	7	380	13.1	10.8
W	4	11	47	73	34	2	-	171	11.3	4.9
WNW	6	10	25	15	17	1	-	74	10.2	2.1
NW	3	6	8	9	2	2	-	30	9.6	0.9
NNW	2	1	1	10	1	1	-	16	11.1	0.5
VRBL	56	17	6	1	-	-	-	80	3.5	2.3
CALM	20	-	-	-	-	-	-	20	0.0	0.6
TOT	194	461	1326	1004	480	47	10	3522	9.9	100.3

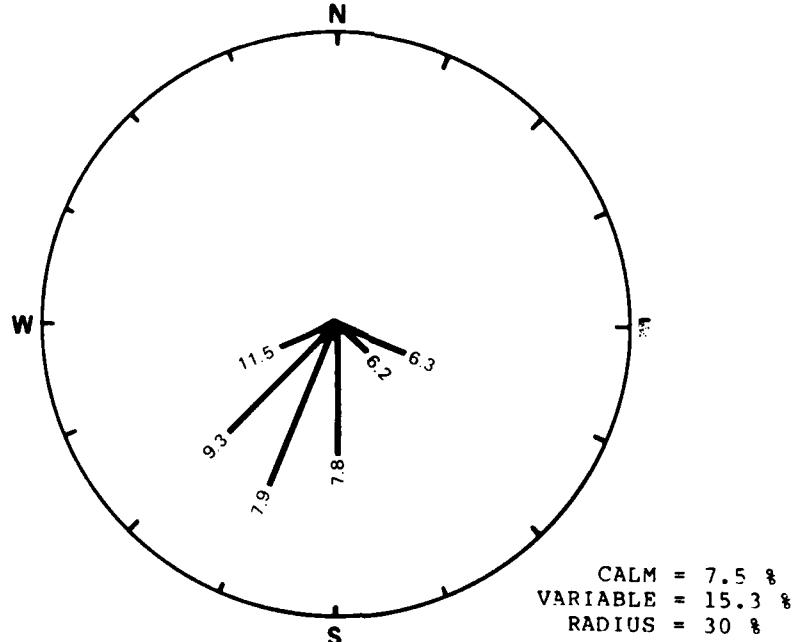


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
AUGUST - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20~24	>25			
N	20	5	3	2	1	-	-	31	4.2	0.2
NNE	10	4	4	-	-	-	-	18	4.1	0.1
NE	52	10	8	-	3	1	-	74	3.7	0.5
ENE	44	31	8	-	1	-	-	84	4.0	0.6
E	78	43	16	2	3	-	-	142	4.3	1.0
ESE	250	397	348	84	28	6	1	1114	6.3	7.9
SE	160	196	177	56	13	1	1	604	6.2	4.3
SSE	123	151	94	25	15	-	2	410	5.9	2.9
S	210	396	1062	391	40	4	-	2103	7.8	14.9
SSW	425	608	840	477	182	24	2	2558	7.9	18.1
SW	327	386	658	539	321	35	9	2275	9.3	16.1
WSW	158	102	133	172	214	81	26	886	11.5	6.3
W	33	29	48	63	69	12	3	257	11.3	1.8
WNW	92	30	27	38	16	1	3	207	6.8	1.5
NW	42	13	24	17	10	1	1	108	7.0	0.8
NNW	10	4	3	6	10	-	-	33	9.6	0.2
VRBL	1676	417	57	8	-	-	-	2158	2.9	15.3
CALM	1061	-	-	-	-	-	-	1061	0.0	7.5
TOT	4771	2822	3510	1880	926	166	48	14123	6.0	100.0

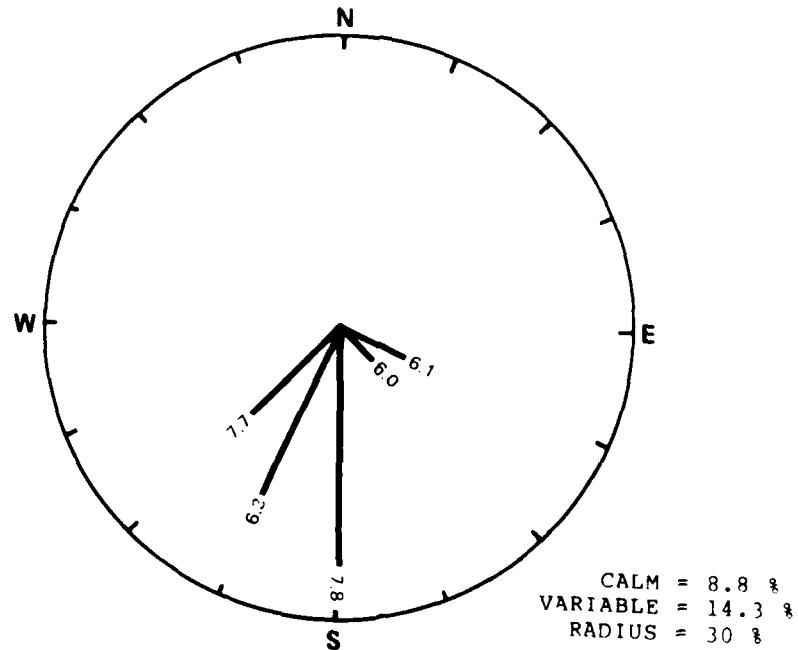


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
AUGUST - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	>25			
N	2	1	-	-	-	-	3	2.7	0.1
NNE	3	1	1	-	-	-	5	4.2	0.1
NE	14	-	1	-	-	-	15	2.1	0.4
ENE	7	2	1	-	-	-	10	3.9	0.3
E	25	6	6	1	-	-	38	4.0	1.1
ESE	89	75	73	20	9	3	269	6.1	7.6
SE	56	33	47	15	4	1	156	6.0	4.4
SSE	25	26	20	3	1	-	75	5.5	2.1
S	72	153	477	158	5	-	865	7.8	24.5
SSW	144	228	224	60	7	-	663	6.3	18.8
SW	107	101	105	110	28	2	453	7.7	12.8
WSW	35	21	6	10	15	5	92	7.9	2.6
W	7	6	2	1	-	-	16	4.7	0.5
WNW	21	3	1	5	-	-	30	4.5	0.9
NW	13	1	5	-	-	-	19	3.9	0.5
NNW	2	-	-	-	2	-	4	9.9	0.1
VRBL	453	51	2	-	-	-	506	2.3	14.3
CALM	309	-	-	-	-	-	309	0.0	8.8
TOT	1384	708	971	383	71	11	-	3528	5.6 100.1

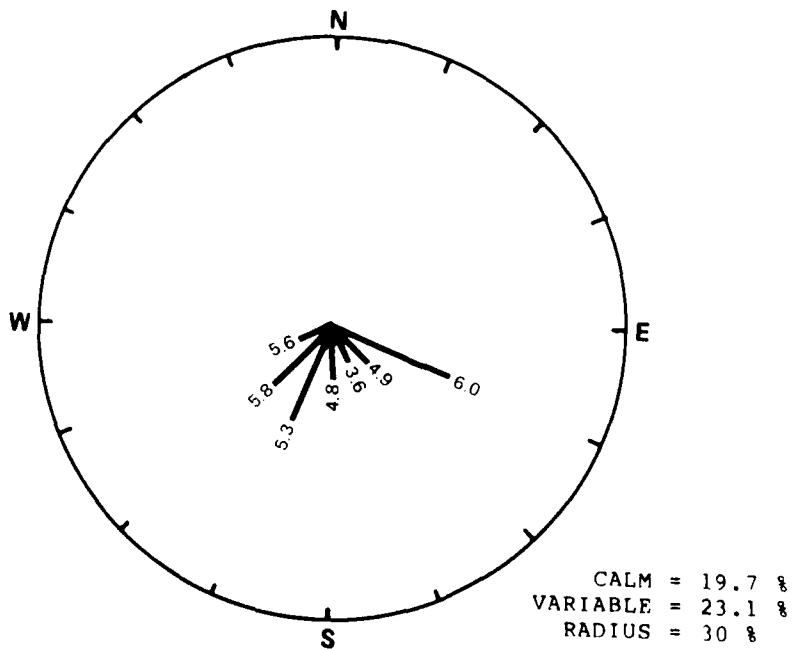


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
AUGUST - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24			
N	13	4	-	-	-	-	17	2.7	0.5
NNE	5	-	1	-	-	-	6	2.7	0.2
NE	27	1	1	-	-	-	29	1.8	0.8
ENE	22	8	-	-	-	-	30	2.5	0.8
E	37	23	4	-	-	-	64	3.6	1.8
ESE	117	157	157	33	1	-	465	6.0	13.2
SE	66	63	41	3	-	-	173	4.9	4.9
SSE	74	26	7	1	-	-	108	3.6	3.1
S	96	49	24	11	4	-	184	4.8	5.2
SSW	192	96	34	35	16	-	373	5.3	10.6
SW	162	59	31	18	29	2	302	5.8	8.5
WSW	90	20	4	8	9	6	139	5.6	3.9
W	22	3	4	3	1	-	33	4.8	0.9
WNW	57	4	2	2	1	-	66	2.8	1.9
NW	23	2	2	-	1	-	28	3.0	0.8
NNW	4	-	-	-	-	-	4	2.8	0.1
VRBL	758	54	3	1	-	-	816	2.1	23.1
CALM	697	-	-	-	-	-	697	0.0	19.7
TOT	2462	569	315	115	62	8	3534	3.4	100.0

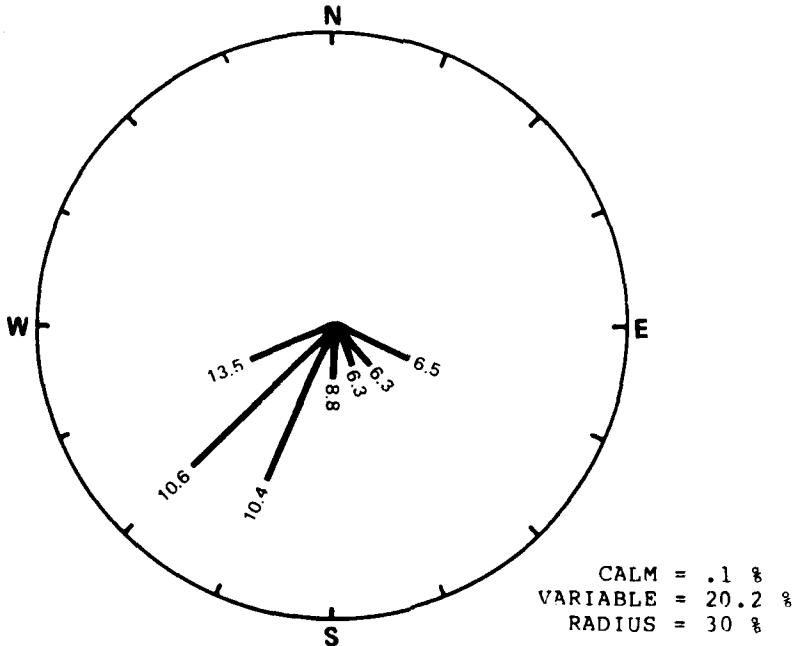


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
AUGUST - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	3	-	2	-	-	-	-	5	4.9	0.1
NNE	2	1	-	-	-	-	-	3	3.2	0.1
NE	5	4	6	-	2	-	-	17	6.6	0.5
ENE	14	21	6	-	1	-	-	42	5.0	1.2
E	9	10	5	1	3	-	-	28	6.5	0.8
ESE	35	147	105	19	9	-	-	315	6.5	8.9
SE	31	85	68	17	1	-	-	202	6.3	5.7
SSE	18	82	49	11	4	-	-	164	6.3	4.6
S	8	35	88	37	20	-	-	188	8.8	5.3
SSW	27	81	212	171	105	14	1	611	10.4	17.3
SW	22	119	253	180	137	22	7	740	10.6	20.9
WSW	24	37	54	61	86	41	18	321	13.5	9.1
W	3	11	12	10	41	9	3	89	14.4	2.5
WNW	11	13	6	8	9	1	3	51	10.0	1.4
NW	4	7	2	6	4	1	1	25	10.0	0.7
NNW	4	3	3	3	3	-	-	16	8.5	0.5
VRBL	381	282	45	6	-	-	-	714	4.0	20.2
CALM	2	-	-	-	-	-	-	2	0.0	0.1
TOT	603	938	916	530	425	88	33	3533	8.5	99.9



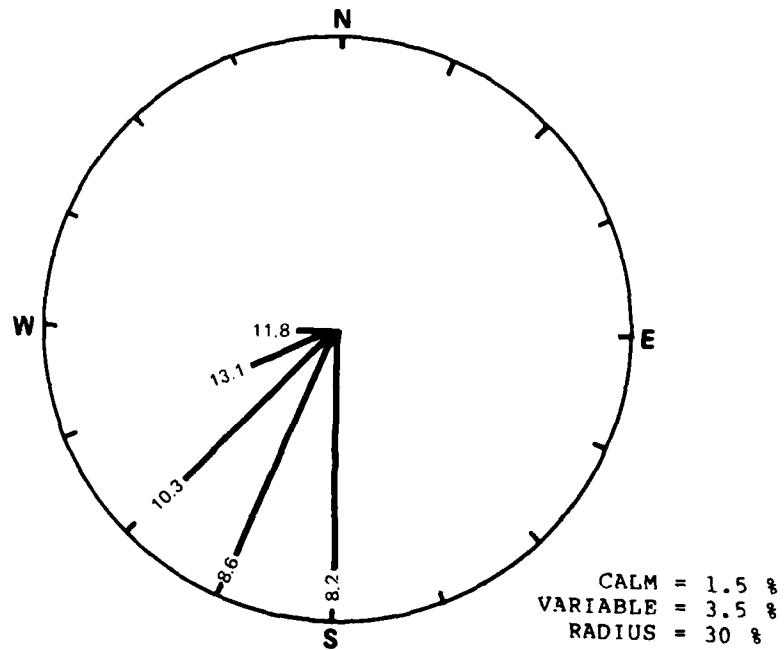
NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
AUGUST - 1964 TO 1982

HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	2	-	1	2	1	-	-	6	8.5	0.2
NNE	-	2	2	-	-	-	-	4	6.8	0.1
NE	6	5	-	-	1	1	-	13	5.8	0.4
ENE	1	-	1	-	-	-	-	2	5.8	0.1
E	7	4	1	-	-	-	-	12	3.9	0.3
ESE	9	18	13	12	9	3	1	65	9.3	1.8
SE	7	15	21	21	8	-	1	73	9.2	2.1
SSE	6	17	18	10	10	-	2	63	9.2	1.8
S	34	159	473	185	11	4	-	866	8.2	24.5
SSW	62	203	370	211	54	10	1	911	8.6	25.8
SW	36	107	269	231	127	9	1	780	10.3	22.1
WSW	9	24	69	93	104	29	6	334	13.1	9.5
W	1	9	30	49	27	3	-	119	11.8	3.4
WNW	3	10	18	23	6	-	-	60	9.5	1.7
NW	2	3	15	11	5	-	-	36	9.8	1.0
NNW	-	1	-	3	5	-	-	9	14.3	0.3
VRBL	84	30	7	1	-	-	-	122	3.4	3.5
CALM	53	-	-	-	-	-	-	53	0.0	1.5
TOT	322	607	1308	852	368	59	12	3528	9.1	100.1

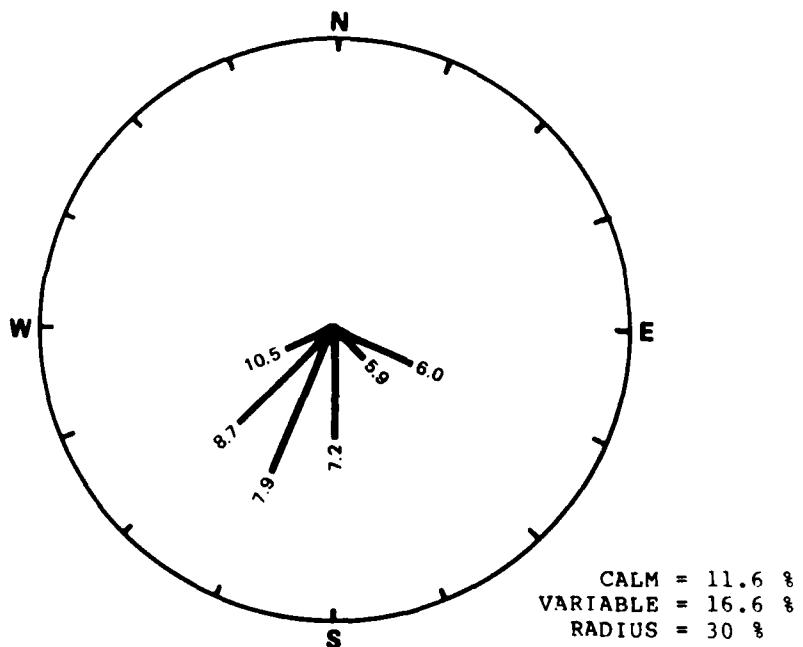


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
SEPTEMBER - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	27	10	9	12	7	1	-	66	7.4	0.5
NNE	25	7	11	5	-	-	-	48	4.9	0.4
NE	72	18	13	11	3	-	-	117	4.6	0.9
ENE	72	39	23	12	-	-	-	146	4.9	1.1
E	91	75	43	13	2	-	-	224	5.1	1.6
ESE	319	420	293	104	21	3	1	1161	6.0	8.5
SE	152	196	162	46	6	1	-	563	5.9	4.1
SSE	109	109	87	15	1	-	-	321	5.5	2.4
S	229	357	702	228	20	2	-	1538	7.2	11.3
SSW	438	620	617	387	185	29	10	2286	7.9	16.7
SW	436	350	427	400	246	48	13	1920	8.7	14.1
WSW	223	82	89	96	135	74	34	733	10.5	5.4
W	51	31	28	48	35	11	10	214	10.3	1.6
WNW	132	29	26	25	8	4	3	227	5.4	1.7
NW	83	18	18	23	27	4	1	174	7.2	1.3
NNW	19	12	13	15	13	2	1	75	8.9	0.5
VRBL	1922	298	41	2	-	-	-	2263	2.5	16.6
CALM	1579	-	-	-	-	-	-	1579	0.0	11.6
TOT	5979	2671	2602	1442	709	179	73	13655	6.0	100.3

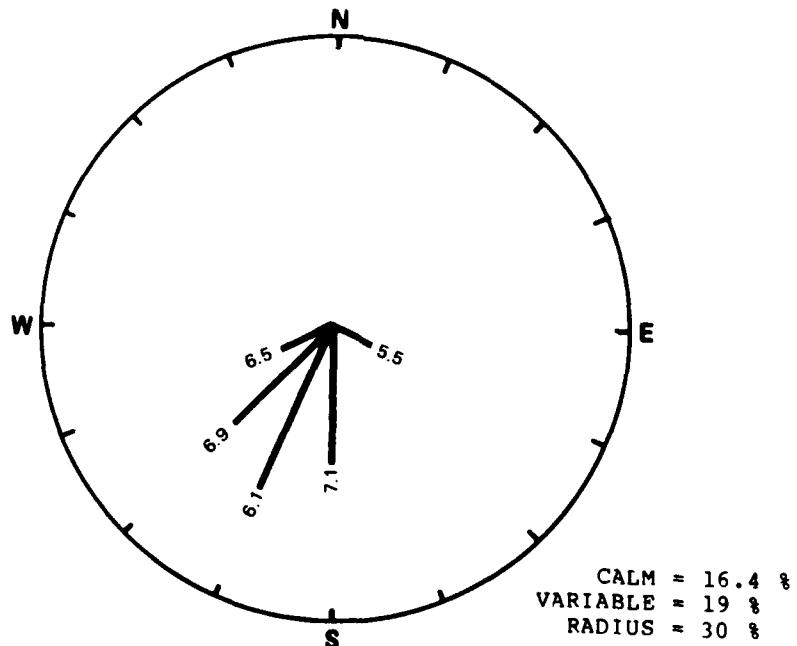


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
SEPTEMBER - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	>25				
N	4	4	2	6	1	-	17	8.2	0.5	
NNE	8	1	2	-	-	-	11	3.7	0.3	
NE	19	3	1	-	-	-	23	2.4	0.7	
ENE	11	1	-	-	-	-	12	2.0	0.4	
E	17	4	1	-	-	-	22	2.9	0.6	
ESE	46	40	23	12	2	-	123	5.5	3.6	
SE	28	18	19	6	1	-	72	5.5	2.1	
SSE	17	15	11	1	-	-	44	5.0	1.3	
S	74	100	245	59	5	-	483	7.1	14.1	
SSW	167	217	165	55	12	1	618	6.1	18.1	
SW	167	110	96	73	27	7	484	6.9	14.2	
WSW	89	30	9	11	13	6	163	6.5	4.8	
W	20	12	3	4	2	-	41	5.3	1.2	
WNW	28	5	4	1	-	-	38	3.1	1.1	
NW	17	1	3	3	11	2	37	9.1	1.1	
NNW	5	1	2	7	3	-	18	9.3	0.5	
VRBL	577	69	3	-	-	-	649	2.3	19.0	
CALM	560	-	-	-	-	-	560	0.0	16.4	
TOT	1854	631	589	238	77	16	10	3415	4.6	100.1

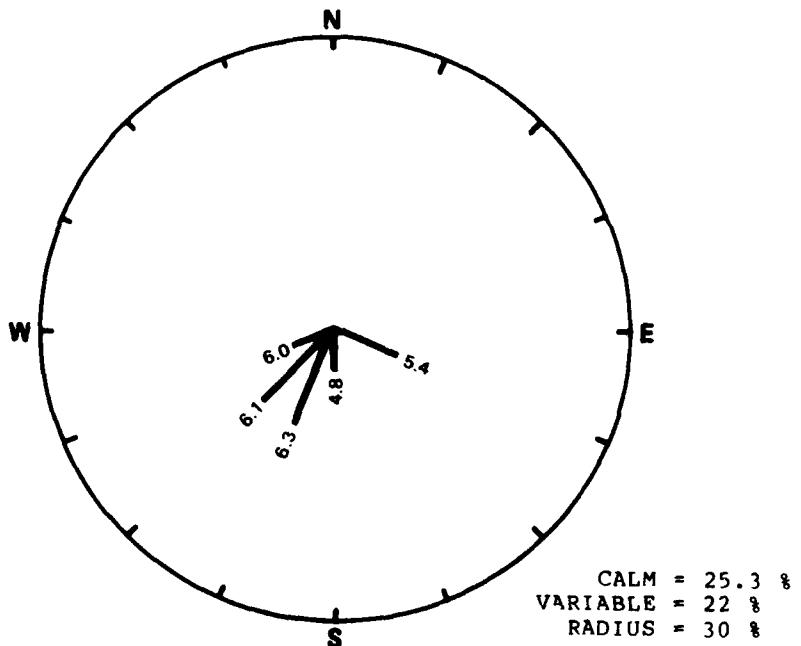


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
SEPTEMBER - 1964 TO 1982
HOURS 0600-1200

DIRECTION	1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT	Avg	%TOT
N	12	-	1	2	4	1	-	20	7.6	0.6
NNE	10	1	-	-	-	-	-	11	2.0	0.3
NE	29	2	-	-	-	-	-	31	2.1	0.9
ENE	26	4	-	2	-	-	-	32	3.1	0.9
E	33	15	7	2	-	-	-	57	4.0	1.7
ESE	77	90	69	10	1	-	-	247	5.4	7.2
SE	31	33	13	2	1	-	-	80	4.9	2.3
SSE	51	25	5	-	-	-	-	81	3.8	2.4
S	75	52	19	12	-	-	-	158	4.8	4.6
SSW	152	95	44	42	18	8	2	361	6.3	10.6
SW	172	63	41	39	30	5	-	350	6.1	10.3
WSW	95	13	14	9	7	6	5	149	6.0	4.4
W	24	5	2	4	4	-	1	40	5.9	1.2
WNW	74	5	6	3	-	-	-	88	2.6	2.6
NW	46	4	4	4	7	-	-	65	4.5	1.9
NNW	9	1	3	2	9	-	-	24	9.1	0.7
VRBL	707	37	7	-	-	-	-	751	1.9	22.0
CALM	864	-	-	-	-	-	-	864	0.0	25.3
TOT	2487	445	235	133	81	20	8	3409	3.3	99.9

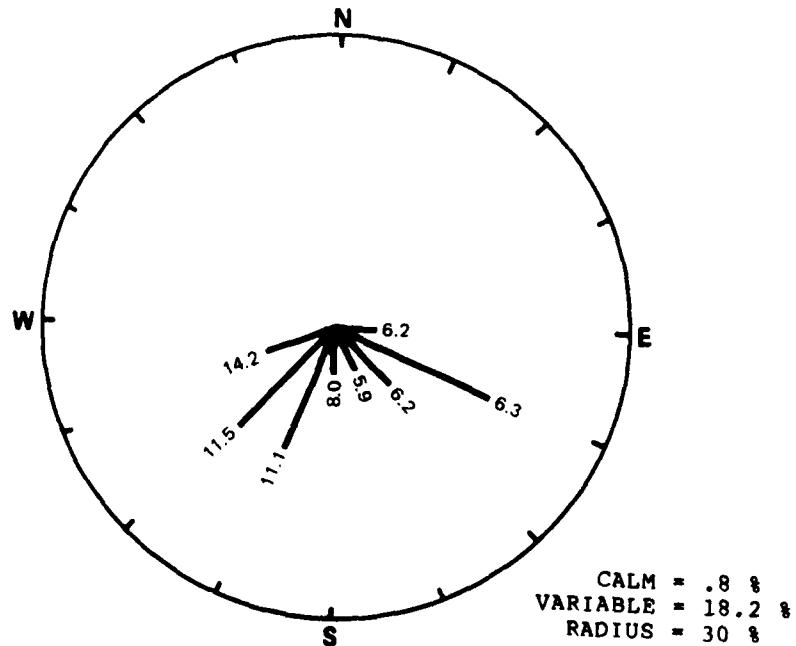


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
SEPTEMBER - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	4	2	4	2	1	-	-	13	7.5	0.4
NNE	6	2	3	4	-	-	-	15	6.2	0.4
NE	16	10	9	7	3	-	-	45	6.8	1.3
ENE	29	29	18	7	-	-	-	83	5.7	2.4
E	27	48	28	11	2	-	-	116	6.2	3.4
ESE	131	225	160	63	15	-	-	594	6.3	17.4
SE	47	103	95	22	2	-	-	269	6.2	7.9
SSE	24	58	43	4	-	-	-	129	5.9	3.8
S	14	36	48	22	12	1	-	133	8.0	3.9
SSW	28	64	126	145	94	16	5	478	11.1	14.0
SW	37	53	125	134	118	20	5	492	11.5	14.4
WSW	24	21	28	28	67	32	18	218	14.2	6.4
W	1	8	7	14	22	10	8	70	15.5	2.0
WNW	15	13	9	10	7	4	3	61	9.7	1.8
NW	11	8	5	5	5	1	1	36	8.6	1.1
NNW	5	4	4	3	-	-	-	16	6.2	0.5
VRBL	426	169	27	1	-	-	-	623	3.5	18.2
CALM	26	-	-	-	-	-	-	26	0.0	0.8
TOT	871	853	739	482	348	84	40	3417	8.0	100.1

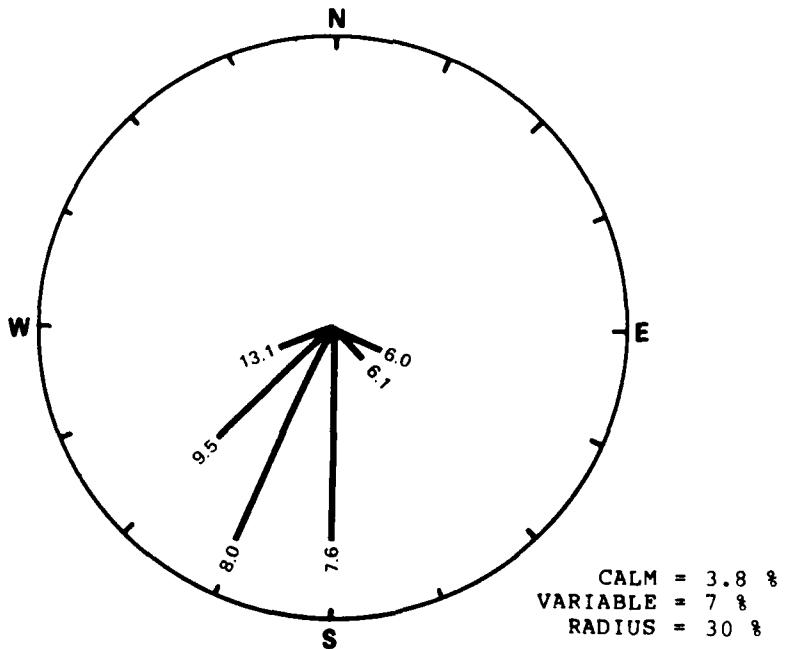


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
SEPTEMBER - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24			
N	7	4	2	2	1	-	16	6.2	0.5
NNE	1	3	6	1	-	-	11	7.1	0.3
NE	8	3	3	4	-	-	18	6.2	0.5
ENE	6	5	5	3	-	-	19	6.1	0.6
E	14	8	7	-	-	-	29	4.6	0.8
ESE	65	65	41	19	3	3	197	6.0	5.8
SE	46	42	35	16	2	1	142	6.1	4.2
SSE	17	11	28	10	1	-	67	7.0	2.0
S	66	169	390	135	3	1	764	7.6	22.4
SSW	91	244	282	145	61	4	829	8.0	24.3
SW	60	124	165	154	71	16	594	9.5	17.4
WSW	15	18	38	48	48	30	6	203	13.1
W	6	6	16	26	7	1	1	63	10.6
WNW	15	6	7	11	1	-	-	40	7.1
NW	9	5	6	11	4	1	-	36	8.9
NNW	-	6	4	3	1	2	1	17	10.7
VRBL	212	23	4	1	-	-	-	240	2.6
CALM	129	-	-	-	-	-	-	129	0.0
TOT	767	742	1039	589	203	59	15	3414	7.6
									100.1

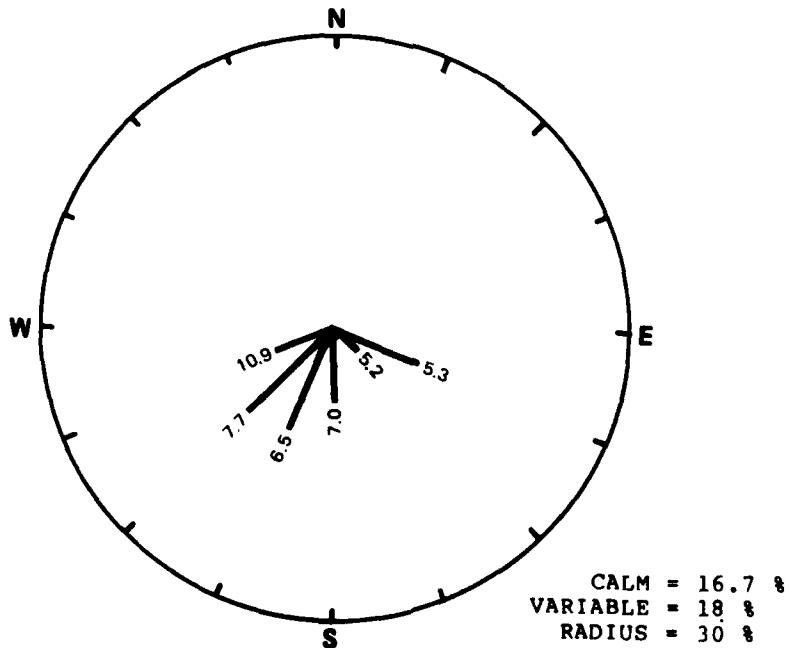


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
OCTOBER - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH								TOT	AVG	%TOT
1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT				
N	49	9	23	17	32	17	2	149	10.2	1.1	
NNE	42	14	13	5	13	3	2	92	7.0	0.7	
NE	91	14	25	20	16	12	5	183	7.4	1.3	
ENE	106	26	27	22	10	-	-	191	5.3	1.4	
E	148	46	28	7	-	-	-	229	4.0	1.6	
ESE	497	476	298	84	7	-	-	1362	5.3	9.8	
SE	184	208	113	28	3	-	-	536	5.2	3.8	
SSE	96	63	53	11	1	-	1	225	5.2	1.6	
S	234	254	370	165	35	-	-	1058	7.0	7.6	
SSW	529	486	294	190	103	12	4	1618	6.5	11.6	
SW	565	370	296	248	188	46	18	1731	7.7	12.4	
WSW	316	107	76	64	174	103	67	907	10.9	6.5	
W	104	7	16	22	42	12	7	210	8.8	1.5	
WNW	163	22	15	26	21	2	4	253	5.3	1.8	
NW	134	26	21	20	15	1	-	217	5.0	1.6	
NNW	33	10	28	34	35	8	-	148	10.6	1.1	
VRBL	2370	134	15	1	-	-	-	2520	2.0	18.0	
CALM	2336	-	-	-	-	-	-	2336	0.0	16.7	
TOT	7997	2272	1711	964	695	216	110	13965	4.0	100.1	

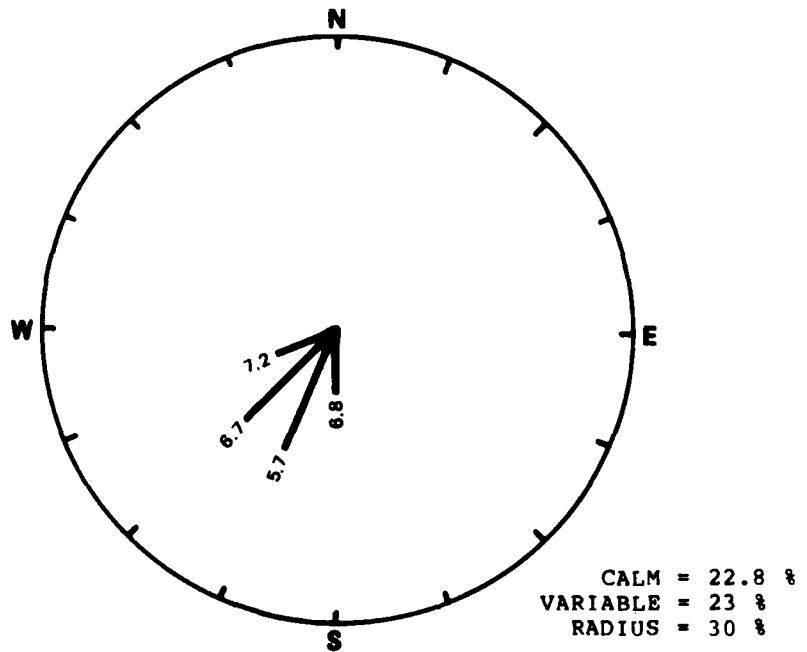


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
OCTOBER - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	13	3	5	5	4	2	-	32	7.7	0.9
NNE	4	3	3	1	1	-	-	12	6.2	0.3
NE	23	1	2	-	-	4	-	30	4.9	0.9
ENE	13	3	1	1	-	-	-	18	3.1	0.5
E	16	3	1	-	-	-	-	20	3.0	0.6
ESE	37	26	18	5	-	-	-	86	4.8	2.5
SE	22	15	8	3	-	-	-	48	4.5	1.4
SSE	9	6	5	2	-	-	-	22	5.4	0.6
S	61	61	66	29	12	-	-	229	6.8	6.6
SSW	181	149	89	30	17	3	1	470	5.7	13.5
SW	181	114	68	58	37	7	2	467	6.7	13.4
WSW	113	38	25	12	18	14	7	227	7.2	6.5
W	39	2	3	5	5	-	1	55	5.2	1.6
WNW	52	5	3	8	4	-	-	72	4.2	2.1
NW	31	5	7	9	7	-	-	59	6.2	1.7
NNW	4	4	8	15	6	3	-	40	11.4	1.1
VRBL	765	32	4	-	-	-	-	801	2.0	23.0
CALM	793	-	-	-	-	-	-	793	0.0	22.8
TOT	2357	470	316	183	111	33	11	3481	3.8	100.1

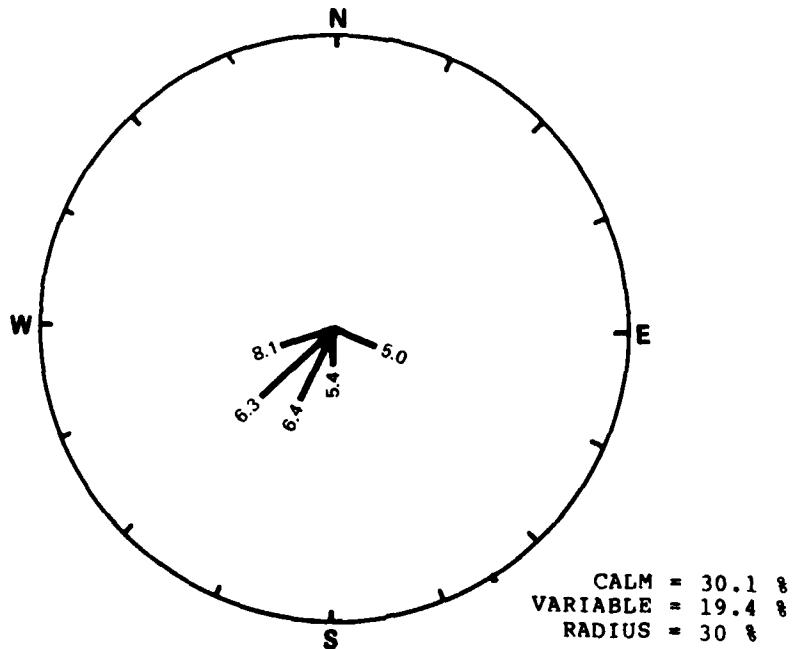


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
OCTOBER - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	20-24				
N	27	1	4	4	6	10	-	52	8.9	1.5
NNE	21	3	1	2	-	1	-	28	3.7	0.8
NE	43	1	2	2	4	6	1	59	5.8	1.7
ENE	29	3	2	1	2	-	-	37	3.8	1.1
E	29	9	3	-	-	-	-	41	3.4	1.2
ESE	69	49	42	8	1	-	-	169	5.0	4.8
SE	16	24	6	-	-	-	-	46	4.4	1.3
SSE	24	8	4	-	-	-	-	36	3.7	1.0
S	64	38	26	15	2	-	-	145	5.4	4.1
SSW	126	69	29	40	19	5	3	291	6.4	8.3
SW	195	50	39	24	35	12	2	357	6.3	10.2
WSW	125	15	9	6	27	14	15	211	8.1	6.0
W	43	-	3	3	1	3	-	53	4.3	1.5
WNW	67	6	2	8	1	-	1	85	3.2	2.4
NW	72	15	11	6	5	1	-	110	4.3	3.1
NNW	17	-	10	5	17	3	-	52	10.2	1.5
VRBL	670	7	3	-	-	-	-	680	1.6	19.4
CALM	1055	-	-	-	-	-	-	1055	0.0	30.1
TOT	2692	298	196	124	120	55	22	3507	3.3	100.0

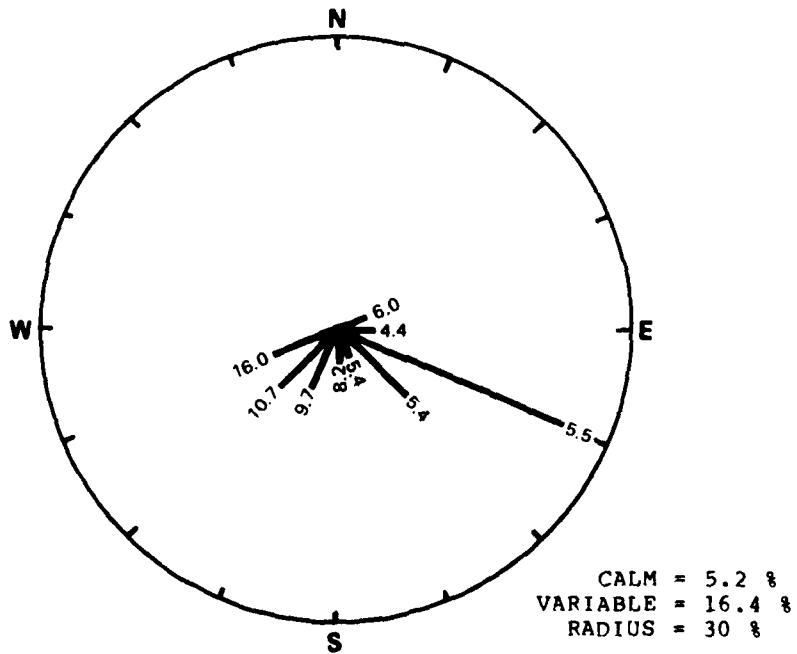


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
OCTOBER - 1964 TO 1982
HOURS 1200-1800

DIRECTION	1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT	AVG	%TOT
N	1	3	5	4	16	5	-	34	14.8	1.0
NNE	9	4	1	1	10	2	2	29	11.3	0.8
NE	16	6	8	9	7	2	4	52	9.7	1.5
ENE	51	14	16	14	8	-	-	103	6.0	3.0
E	83	29	22	6	-	-	-	140	4.4	4.0
ESE	301	323	201	64	6	-	-	895	5.5	25.7
SE	104	141	80	18	1	-	-	344	5.4	9.9
SSE	40	37	22	6	1	-	1	107	5.4	3.1
S	23	20	41	24	11	-	-	119	8.2	3.4
SSW	30	35	54	63	39	3	-	224	9.7	6.4
SW	53	38	55	54	58	17	11	286	10.7	8.2
WSW	31	15	17	22	84	54	24	247	16.0	7.1
W	10	3	3	7	24	6	4	57	14.5	1.6
WNW	21	4	5	7	2	2	3	44	8.3	1.3
NW	15	4	1	2	3	-	-	25	5.7	0.7
NNW	8	5	4	4	6	-	-	27	8.8	0.8
VRBL	514	54	5	-	-	-	-	573	2.4	16.4
CALM	132	-	-	-	-	-	-	182	0.0	5.2
TOT	1492	735	540	305	276	91	49	3488	6.6	100.1

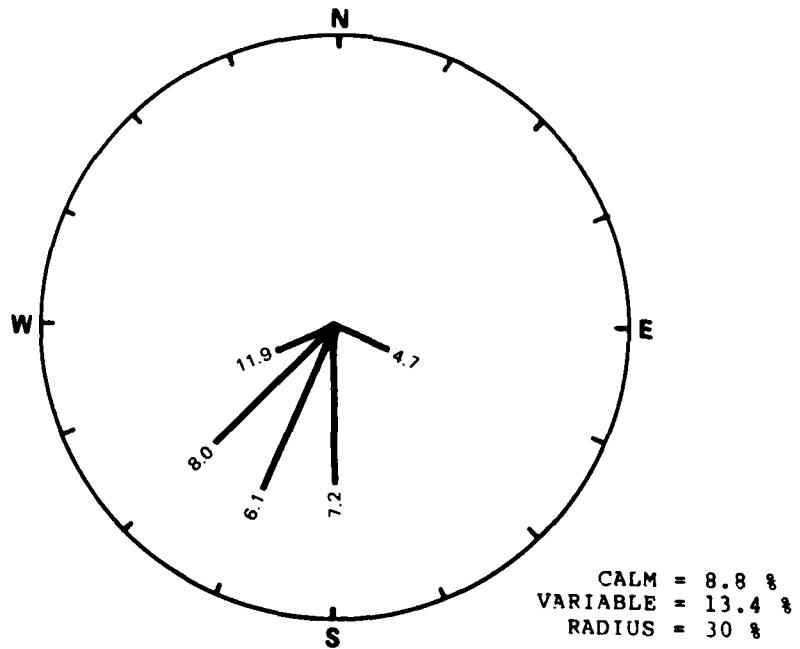


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
OCTOBER - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	20-24				
N	8	2	9	4	6	-	31	10.0	0.9	
NNE	8	4	8	1	2	-	23	6.0	0.7	
NE	9	6	13	9	5	-	42	8.5	1.2	
ENE	13	6	8	6	-	-	33	6.1	0.9	
E	20	5	2	1	-	-	28	3.7	0.8	
ESE	90	78	37	7	-	-	212	4.7	6.1	
SE	42	28	19	7	2	-	98	5.1	2.8	
SSE	23	12	22	3	-	-	60	5.5	1.7	
S	86	135	237	97	10	-	565	7.2	16.2	
SSW	192	233	122	57	28	1	633	6.1	18.1	
SW	136	168	134	112	58	10	621	8.0	17.8	
WSW	47	39	25	24	45	21	222	11.9	6.4	
W	12	2	7	7	12	3	45	11.5	1.3	
WNW	23	7	5	3	14	-	52	7.5	1.5	
NW	16	2	2	3	-	-	23	4.2	0.7	
NNW	4	1	6	10	6	2	29	11.6	0.8	
VRBL	421	41	3	1	-	-	466	2.3	13.4	
CALM	306	-	-	-	-	-	306	0.0	8.8	
TOT	1456	769	659	352	188	37	28	3489	6.0	100.1

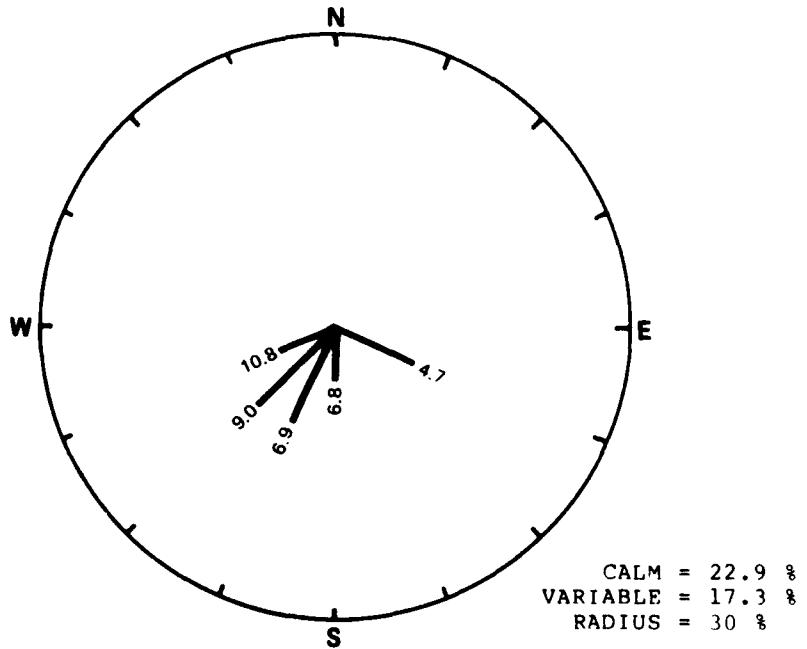


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
NOVEMBER - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	69	7	13	17	35	9	1	151	8.5	1.1
NNE	57	7	10	7	4	-	-	85	4.7	0.6
NE	232	17	9	10	9	5	-	282	3.3	2.1
ENE	165	16	9	2	-	-	-	192	2.6	1.4
E	203	59	28	8	1	-	-	299	3.7	2.2
ESE	525	367	200	34	10	-	-	1136	4.7	8.4
SE	160	92	53	12	1	-	-	318	4.4	2.3
SSE	58	27	20	6	1	-	-	112	4.9	0.8
S	183	177	206	120	21	2	-	709	6.8	5.2
SSW	569	308	194	192	139	18	6	1426	6.9	10.5
SW	538	235	180	204	254	81	44	1536	9.0	11.3
WSW	320	80	57	61	130	113	71	832	10.8	6.1
W	62	9	15	29	36	25	7	183	11.0	1.3
WNW	249	18	30	21	13	4	1	336	4.0	2.5
NW	225	34	35	57	17	8	1	377	5.5	2.8
NNW	41	21	24	35	28	5	1	155	9.2	1.1
VRBL	2257	91	11	1	-	-	-	2360	1.8	17.3
CALM	3115	-	-	-	-	-	-	3115	0.0	22.9
TOT	9028	1565	1094	816	699	270	132	13604	4.0	99.9

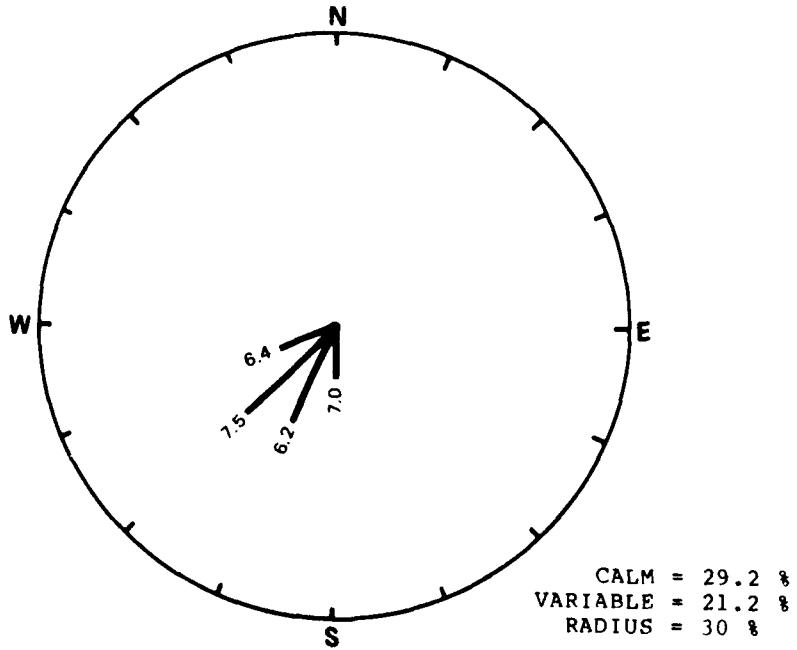


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
NOVEMBER - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	15	1	3	6	4	2	-	31	7.9	0.9
NNE	8	1	2	2	3	-	-	16	7.1	0.5
NE	54	3	3	-	2	-	-	62	2.6	1.8
ENE	25	1	-	-	-	-	-	26	1.8	0.8
E	13	4	-	-	-	-	-	17	2.9	0.5
ESE	29	17	4	1	-	-	-	51	3.9	1.5
SE	17	5	6	1	-	-	-	29	4.7	0.9
SSE	9	7	2	1	-	-	-	19	4.7	0.6
S	46	48	42	32	9	1	-	178	7.0	5.2
SSW	157	86	55	44	27	1	-	370	6.2	10.9
SW	194	70	52	55	53	14	9	447	7.5	13.1
WSW	120	28	16	9	21	9	5	208	6.4	6.1
W	12	2	3	2	3	1	1	24	7.8	0.7
WNW	67	3	15	4	-	1	-	90	3.6	2.6
NW	60	5	13	14	1	-	-	93	4.6	2.7
NNW	5	6	4	6	7	-	-	28	9.2	0.8
VRBL	688	29	4	-	-	-	-	721	1.9	21.2
CALM	996	-	-	-	-	-	-	996	0.0	29.2
TOT	2515	316	224	177	130	29	15	3406	3.5	100.2



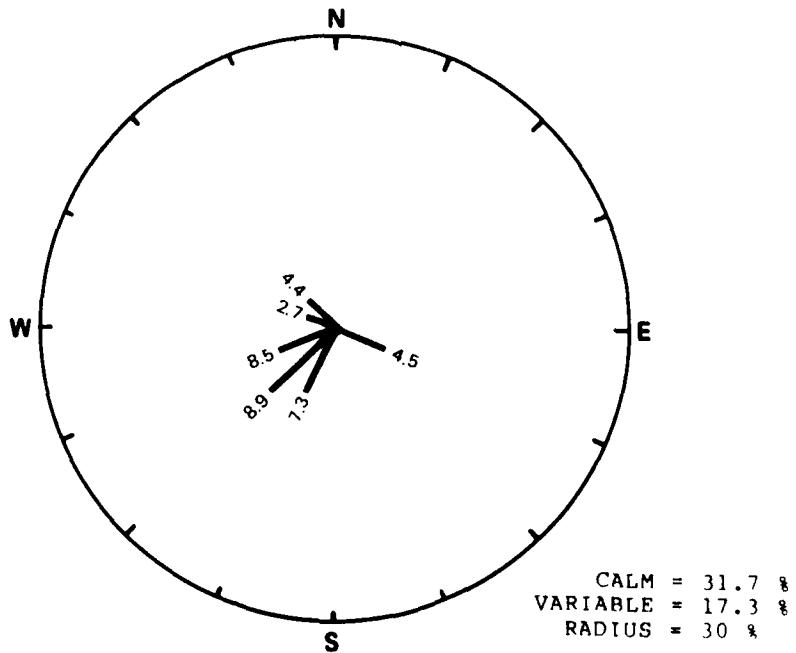
NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
NOVEMBER - 1964 TO 1982

HOURS 0600-1200

DIRECTION		WIND SPEED, MPH									
	1-3	4-6	7-9	10-14	15-19	20-24	>25	TOT	Avg	%TOT	
N	36	2	1	2	7	2	-	50	5.2	1.5	
NNE	22	3	2	-	1	-	-	28	3.2	0.8	
NE	79	1	2	6	-	4	-	92	3.3	2.7	
ENE	39	3	4	-	-	-	-	46	2.5	1.4	
E	37	10	6	2	-	-	-	55	3.8	1.6	
ESE	91	51	34	5	-	-	-	181	4.5	5.3	
SE	22	13	4	-	-	-	-	39	3.8	1.1	
SSE	13	1	2	2	-	-	-	18	4.6	0.5	
S	35	25	21	5	3	-	-	89	5.5	2.6	
SSW	100	41	28	32	33	2	2	238	7.3	7.0	
SW	130	40	23	30	60	24	6	313	8.9	9.2	
WSW	118	14	7	11	22	30	9	211	8.5	6.2	
W	39	1	4	2	9	9	2	66	8.4	1.9	
WNW	113	5	5	2	4	1	-	130	2.7	3.8	
NW	100	10	8	9	6	5	-	138	4.4	4.1	
NNW	19	5	4	9	4	1	1	43	7.7	1.3	
VRBL	568	14	6	-	-	-	-	588	1.7	17.3	
CALM	1080	-	-	-	-	-	-	1080	0.0	31.7	
TOT	2641	239	161	117	149	78	20	3405	3.4	100.0	



NWC TP 6572

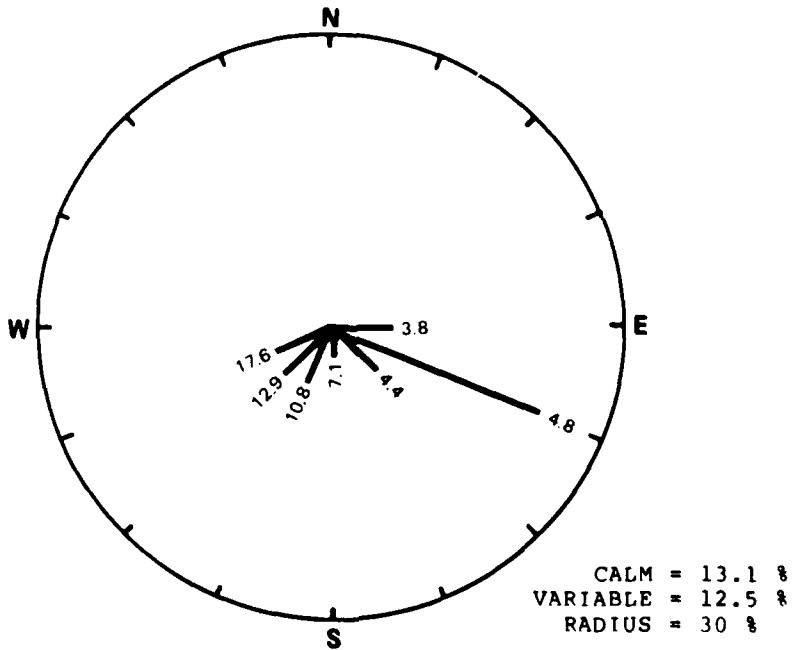
WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS

NOVEMBER - 1964 TO 1982

HOURS 1200-1800

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT	
	1-3	4-6	7-9	10-14	15-19	20-24				
N	15	1	3	8	18	5	-	50	11.6	1.5
NNE	20	1	2	3	-	-	-	26	4.3	0.8
NE	63	11	3	4	6	1	-	88	4.3	2.6
ENE	75	9	4	1	-	-	-	89	2.8	2.6
E	142	44	21	6	1	-	-	214	3.8	6.3
ESE	362	270	144	21	10	-	-	807	4.8	23.7
SE	107	65	36	8	1	-	-	217	4.4	6.4
SSE	22	10	10	-	-	-	-	42	4.5	1.2
S	35	22	29	20	6	1	-	113	7.1	3.3
SSW	39	25	35	49	53	9	4	214	10.8	6.3
SW	41	19	30	35	63	33	13	234	12.9	6.9
WSW	17	6	13	25	61	47	43	212	17.6	6.2
W	6	2	5	14	19	10	4	60	14.8	1.8
WNW	33	4	3	6	7	2	1	56	6.8	1.6
NW	32	10	4	8	6	3	1	64	6.9	1.9
NNW	12	6	9	6	8	3	-	44	9.1	1.3
VRBL	402	21	1	-	-	-	-	424	1.8	12.5
CALM	444	-	-	-	-	-	-	444	0.0	13.1
TOT	1867	526	352	214	259	114	66	3398	5.9	100.0

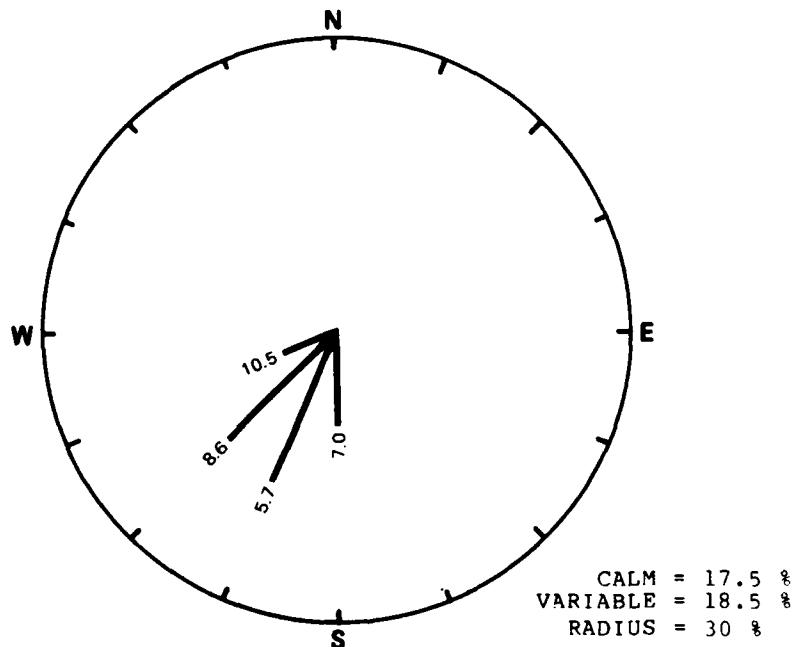


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
NOVEMBER - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH						TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24			
N	3	3	6	1	6	-	1	10.3	0.6
NNE	7	2	4	2	-	-	-	5.5	0.4
NE	36	2	1	-	1	-	-	2.4	1.2
ENE	26	3	1	1	-	-	-	2.7	0.9
E	11	1	1	-	-	-	-	3.4	0.4
ESE	43	29	18	7	-	-	-	4.9	2.9
SE	14	9	7	3	-	-	-	4.9	1.0
SSE	14	9	6	3	1	-	-	5.5	1.0
S	67	82	114	63	3	-	-	7.0	9.7
SSW	273	156	76	67	26	6	-	5.7	17.8
SW	173	106	75	84	78	10	16	8.6	16.0
WSW	65	32	21	16	26	27	14	10.5	5.9
W	5	4	3	11	5	5	-	11.5	1.0
WNW	36	6	7	9	2	-	-	5.0	1.8
NW	33	9	10	26	4	-	-	7.2	2.4
NNW	5	4	7	14	9	1	-	11.0	1.2
VRBL	599	27	-	1	-	-	-	2.0	18.5
CALM	595	-	-	-	-	-	-	0.0	17.5
TOT	2005	484	357	308	161	49	31	3395	4.9 100.2

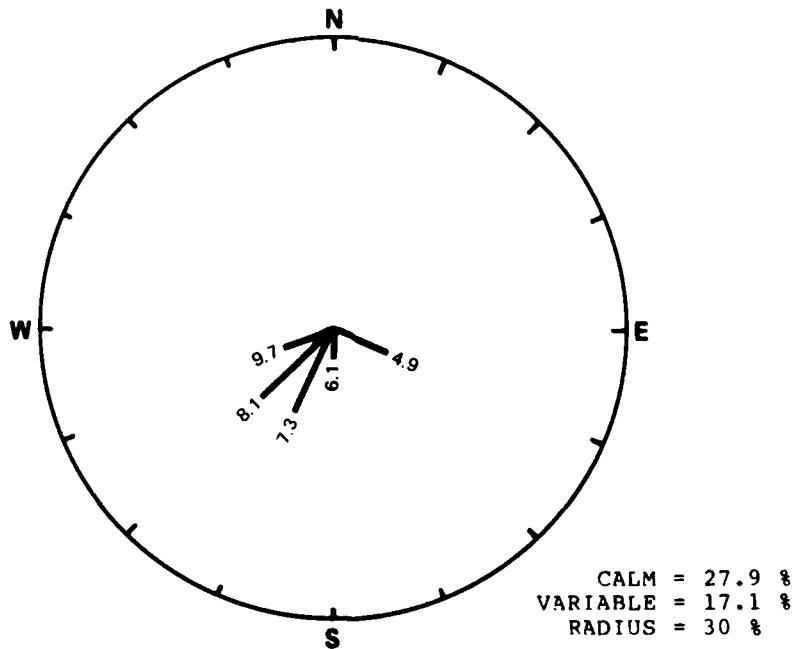


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
DECEMBER - 1964 TO 1982
HOURS 0000-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	125	13	14	24	54	40	18	288	10.5	2.0
NNE	71	15	8	9	8	4	6	121	6.5	0.9
NE	299	16	13	15	5	5	-	353	3.1	2.5
ENE	234	32	9	4	3	-	-	282	2.9	2.0
E	243	67	18	2	-	-	-	330	3.3	2.3
ESE	422	226	188	46	11	-	-	893	4.9	6.3
SE	125	65	59	12	1	1	-	263	4.7	1.9
SSE	32	20	21	8	-	-	-	81	5.5	0.6
S	205	105	115	66	21	-	1	513	6.1	3.6
SSW	520	263	153	160	163	30	12	1301	7.3	9.2
SW	601	219	151	182	168	81	37	1439	8.1	10.2
WSW	339	51	40	54	133	87	37	741	9.7	5.2
W	73	14	24	26	41	20	25	223	12.1	1.6
WNW	232	25	29	24	34	14	11	369	6.1	2.6
NW	221	33	43	30	30	13	6	376	5.9	2.7
NNW	46	19	27	31	52	26	2	203	11.3	1.4
VRBL	2306	81	22	1	-	-	-	2410	1.8	17.1
CALM	3934	-	-	-	-	-	-	3934	0.0	27.9
TOT	10028	1264	934	694	724	321	155	14120	4.0	100.0

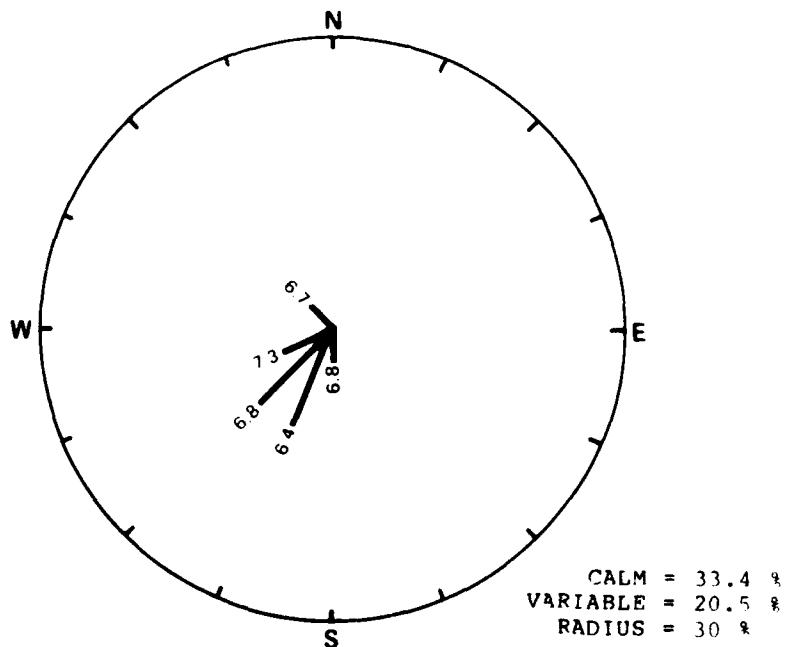


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
DECEMBER - 1964 TO 1982
HOURS 0000-0600

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	8	2	4	3	3	1	-	21	7.9	0.6
NNE	14	-	5	2	1	-	-	22	5.2	0.6
NE	68	4	2	2	2	1	-	79	2.8	2.2
ENE	15	3	4	1	-	-	-	23	3.9	0.7
E	15	2	3	-	-	-	-	20	3.6	0.6
ESE	26	15	25	4	-	-	-	70	5.3	2.0
SE	12	5	9	4	-	-	-	30	5.5	0.8
SSE	5	1	7	-	-	-	-	13	5.4	0.4
S	37	21	32	19	5	-	1	115	6.8	3.3
SSW	160	81	49	48	32	3	1	374	6.4	10.6
SW	171	72	54	42	31	10	5	385	6.8	10.9
WSW	120	18	12	9	26	13	7	205	7.3	5.8
W	14	6	4	4	3	1	-	32	7.0	0.9
WNW	55	6	11	3	4	1	-	80	4.3	2.3
NW	54	16	12	12	9	3	4	110	6.7	3.1
NNW	1	8	8	11	11	10	-	49	13.1	1.4
VRBL	694	26	5	-	-	-	-	725	1.9	20.5
CALM	1181	-	-	-	-	-	-	1181	0.0	33.4
TOT	2650	286	246	164	127	43	18	3534	3.4	100.0

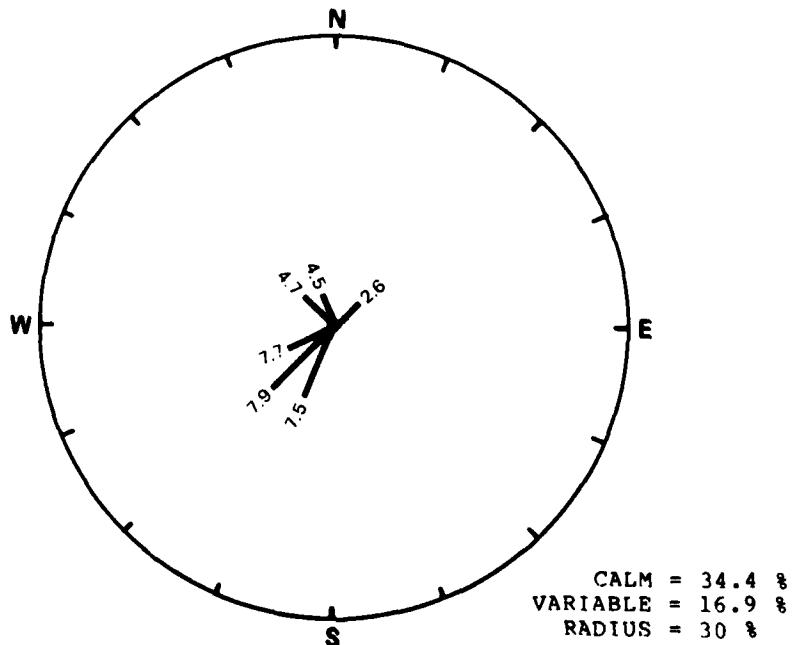


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
DECEMBER - 1964 TO 1982
HOURS 0600-1200

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	66	6	1	3	6	8	8	98	7.3	2.8
NNE	24	5	1	3	1	2	4	40	7.3	1.1
NE	109	6	3	1	1	2	-	122	2.6	3.5
ENE	45	4	2	1	1	-	-	53	2.9	1.5
E	25	11	1	-	-	-	-	37	3.4	1.0
ESE	37	24	26	9	1	-	-	97	5.5	2.7
SE	14	13	10	-	-	-	-	37	4.8	1.0
SSE	7	9	3	5	-	-	-	24	6.3	0.7
S	38	30	13	4	6	-	-	91	5.4	2.6
SSW	103	50	29	27	41	5	3	258	7.5	7.3
SW	135	44	27	44	32	21	6	309	7.9	8.8
WSW	106	13	4	10	28	18	3	182	7.7	5.2
W	39	2	5	2	6	3	8	65	9.2	1.8
WNW	95	5	9	5	9	4	2	129	4.7	3.7
NW	94	3	15	4	5	3	2	126	4.5	3.6
NNW	19	1	8	6	11	6	-	51	9.8	1.4
VRBL	576	15	5	-	-	-	-	596	1.6	16.9
CALM	1213	-	-	-	-	-	-	1213	0.0	34.4
TOT	2745	241	162	124	148	72	36	3528	3.4	100.0

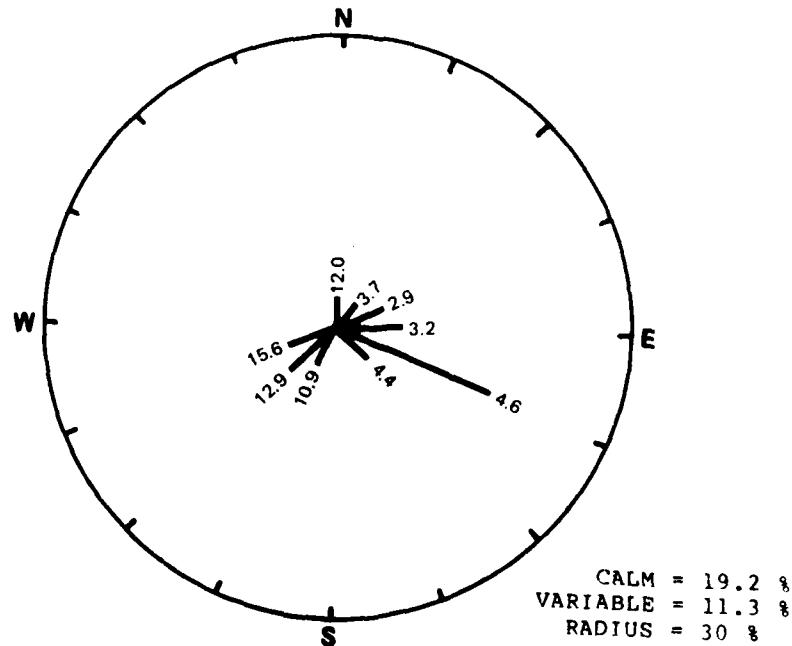


NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
DECEMBER - 1964 TO 1982
HOURS 1200-1800

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	43	3	2	9	20	26	7	110	12.0	3.1
NNE	29	7	2	3	4	1	1	47	5.6	1.3
NE	89	5	5	8	1	2	-	110	3.7	3.1
ENE	156	20	2	2	-	-	-	182	2.9	5.2
E	191	45	11	2	-	-	-	249	3.2	7.1
ESE	321	164	104	21	9	-	-	619	4.6	17.6
SE	78	39	33	3	1	-	-	154	4.4	4.4
SSE	9	7	5	-	-	-	-	21	4.7	0.6
S	29	17	19	14	7	-	-	86	6.9	2.4
SSW	37	17	21	27	44	12	2	160	10.9	4.5
SW	45	20	23	38	56	31	16	229	12.9	6.5
WSW	36	2	9	18	51	46	22	184	15.6	5.2
W	10	5	10	13	21	11	16	86	16.0	2.4
WNW	41	6	2	5	15	8	9	86	10.2	2.4
NW	52	4	4	4	7	1	-	72	4.4	2.0
NNW	21	5	5	2	12	6	1	52	9.6	1.5
VRBL	379	15	5	-	-	-	-	399	1.7	11.3
CALM	678	-	-	-	-	-	-	678	0.0	19.2
TOT	2244	381	262	169	250	144	74	3524	5.3	99.8



NWC TP 6572

WEATHER STATION NAME: I.O.B.

SUMMARY WIND ROSE - LIKE MONTHS
DECEMBER - 1964 TO 1982
HOURS 1800-2400

DIRECTION	WIND SPEED, MPH							TOT	AVG	%TOT
	1-3	4-6	7-9	10-14	15-19	20-24	>25			
N	8	2	7	9	25	5	3	59	14.1	1.7
NNE	4	3	-	1	2	1	1	12	9.7	0.3
NE	33	1	3	4	1	-	-	42	3.6	1.2
ENE	18	5	1	-	-	-	-	24	2.5	0.7
E	12	9	3	-	-	-	-	24	4.1	0.7
ESE	38	23	33	12	1	-	-	107	5.8	3.0
SE	21	8	7	5	-	1	-	42	5.4	1.2
SSE	11	3	6	3	-	-	-	23	5.4	0.7
S	101	37	51	29	3	-	-	221	5.6	6.3
SSW	220	115	54	58	46	10	6	509	6.8	14.4
SW	250	83	47	58	49	19	10	516	7.1	14.6
WSW	77	18	15	17	28	10	5	170	8.4	4.8
W	10	1	5	7	11	5	1	40	12.4	1.1
WNW	41	8	7	11	6	1	-	74	5.8	2.1
NW	21	10	12	10	9	6	-	68	9.0	1.9
NNW	5	5	6	12	18	4	1	51	12.9	1.4
VRBL	657	25	7	1	-	-	-	690	1.9	19.5
CALM	862	-	-	-	-	-	-	862	0.0	24.4
TOT	2389	356	264	237	199	62	27	3534	4.4	100.0

